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Water Resources Data for Washington

Water Year 1977

Volume 1. Western Washington

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-77-1

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Prepared in cooperation with the State of Washington
and with other agencies

CALENDAR FOR WATER YEAR 1977

1976

OCTOBER

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1977

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Water resources data for the 1977 water year for Washington, consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels in wells and spring. This report, in two volumes, contains discharge records for 258 gaging stations; stage only records for 4 gaging stations; stage and contents for 44 lakes and reservoirs; water quality for 162 stations, and 7 lakes; and water levels for 173 observation wells. Also included are 146 crest-stage partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Washington.

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for
Washington

Water Year 1977

Volume 1. Western Washington

U.S. DEPARTMENT OF THE INTERIOR
MARCH 3, 1849

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-77-1

Prepared in cooperation with the State of Washington
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

For additional information write to
District Chief, Water Resources Division
U. S. Geological Survey
1201 Pacific Avenue Suite 600
Tacoma, Washington 98402
1978

PREFACE

This report was prepared by personnel of the Washington district of the Water Resources Division of the U.S. Geological Survey under the supervision of J. E. McCall, succeeded by C.R. Collier, District Chief, and W. H. Robinson, Regional Hydrologist, Western Region. It was done in cooperation with the State of Washington and with other agencies.

This report is one of a series issued by State. General direction for the series is by J. S. Cragwall, Jr., Chief Hydrologist, U.S. Geological Survey, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management.

Data for Washington are in two volumes as follows:

Volume 1. Western Washington
Volume 2. Eastern Washington

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(Letter after station name designates type of data: (d) discharge (e) elevation, gage height or contents, (c) chemical, (b) biological, (m) microbiological (t) water temperature (s) sediment (p) pesticide)

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WATER RESOURCES DATA FOR WASHINGTON, 1977

INTRODUCTION

Water resources data for the 1977 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water-quality of ground water. This report, in two volumes, contains discharge records for 258 gaging stations; stage only records for 4 gaging stations; stage and contents for 44 lakes and reservoirs; water quality for 162 gaging stations, 7 lakes, 50 wells and 71 miscellaneous sites; and water levels for 173 observation wells. Also included are 146 crest-stage partial-record stations and 19 low-flow partial-record stations. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Washington.

Volume 1 of this report contains data for Western Washington and is defined as the Pacific Slope Basins and that portion of the Lower Columbia River Basin downstream from the Klickitat River Basin. Volume 2 of this report contains data for Eastern Washington and is defined as the Upper Columbia River Basin, the Snake River Basin and the Lower Columbia River Basin downstream to and including the Klickitat River Basin.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cites in the Unites States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, Va. 22304.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records. Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published as an official Survey report on a State-boundary basis. These official Survey reports carry an identification number consisting of the two letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report WA-77-1." Water-Data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161.

COOPERATION

The U.S. Geological Survey and organizations of the State of Washington have had cooperative agreements for the systematic collection of surface-water and water-quality records since 1909. Organizations that supplied data are acknowledge in the station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Washington State Department of Ecology, Wilbur G. Hallauer
Washington State Department of Fisheries, Gordon Sandison
Washington State Department of Transportaion, William A. Bulley, secretary
Washington State Department of Game, Ralph W. Larson, director
City of Seattle, Department of Lighting, Gordon Vickery, superintendent
Municipality of Metropolitan Seattle, Neil Peterson, executive director
City of Tacoma, Department of Public Utilities, A. J. Benedetti, director
City of Tacoma, Department of Public Works, Ronald M. Button, director
City of Everett, Department of Utilities, Marvin C. Haglund, director
City of Bellevue, Department of Public Works, Clark Douglas, director
Chelan County, P.U.D. No. 1, Howard Elmore, manager
King County, Department of Public Works, J. L. DeSpain, director
Lewis County, Department of Public Works, Verne Wagar, director
Spokane County Board of Commissioners, Jerry C. Kopet, chairman
Quileute Tribal Council, Christian Penn, Sr., chairman
Quinault Tribal Council, Joseph B. DeLa Cruz, president
Makah Tribal Council, John Ides, chairman
Spokane Tribe, Glenn F. Galbraith, executive director
Tulalip Tribal Board of Directors, G.S. Williams, chairman
Yakima Tribal Council, Watson Totus, chairman

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 44 gaging stations; the U.S. Environmental Protection Agency, in collecting records for 12 water-quality stations; the U.S. Energy Research and Development Administration, in collecting records for 6 water-quality stations; the Bureau of Reclamation, U.S. Department of Interior, in collecting records for 18 gaging stations; the U.S. Department of State, in collecting records for 13 gaging stations; the Bonneville Power Administration, in collecting records for 4 gaging stations.

The following organizations aided in collecting records:

Crown Zellerbach Corporation; Intercounty River Improvement; ITT Rayonier; Pacific Power and Light Co., No. 1 of Cowlitz County, No. 1 of Douglas County, No. 2 of Grant County, No. 1 of Pend Oreille County, Puget Sound Power and Light Co., Skagit County Engineer; University of Washington, through its Fisheries Research Institute; Washington Public Power Supply System; Washington Water Power Co., Whatcom County Engineer.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report are defined below. See also table for converting English units to International System of units (SI) on the inside of the back cover.

Acre-foot (AC-FT, ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic metres.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse of plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of samples.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blood animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material

Cells /volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonacous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloro-platinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulated the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet or water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT^3/s, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (coloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution area, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (rincipally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, ug/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters(m^2), acres, or hectares. Periphyton benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Partial-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay..........	0.00024 - 0.004	Sedimentation
Silt..........	.004 - .062	Sedimentation
Sand..........	.062 - 2.	Sedimentation or sieve
Gravel........	2.0 -64.0	Sieve

The particle-size distribution given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillienth (1×10^{12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/mL of sample.

Green algae have chlorophyll pigments similar in color to those higher green plants. Some forms produce algal mats or floating "moss in lakes. Their concentrations are expressed as number of cells/mL of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexageria
Species	Hexagenia limbata

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

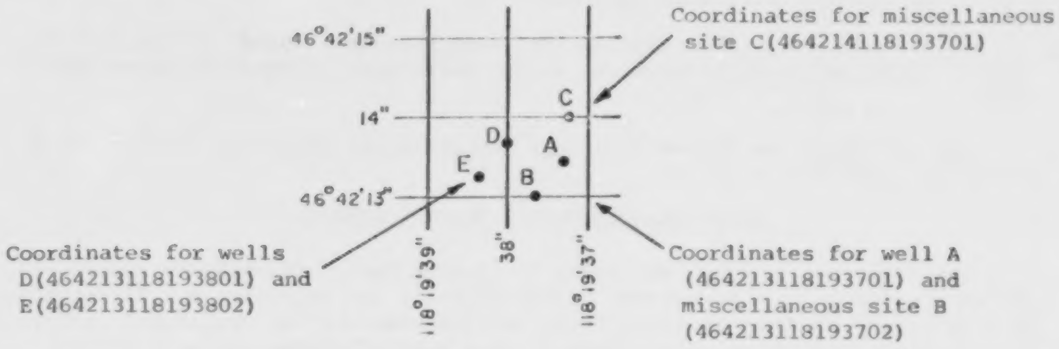
Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indention in a list of stations in the front of the report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete 8-digit number for each station such as 12041000, which appears just to the left of the station name, includes the 2-digit part number "12" plus the 6-digit downstream order number "041000".

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1 below.



Coordinates for miscellaneous site C(464214118193701)

Coordinates for wells D(464213118193801) and E(464213118193802)

Coordinates for well A (464213118193701) and miscellaneous site B (464213118193702)

Figure 1. System for numbering wells and miscellaneous sites (latitude and longtitude).

Local identifier well-numbering system

Local identifier well numbers used by the Geological Survey in the State of Washington are based on and show locations of wells according to the rectangular system for subdivision of public land, indicating township, range, section, and 40-acre tract within the section. For example, in the well number 25/43E-15M1, the part preceeding the hyphen indicates successively the township and range (T.25 N., R.43 E.) north and east of the Willamette base line and meridian. (Because all townships in Washington are north of the Willamette base line the letter "N", indicating north is omitted; and because most of the State is east of the Willamette meridian the letter "E" is sometimes omitted for those ranges east of the Willamette meridian, but "W" is always included when the range lies west of the Willamette meridian.) The first number following the hyphen indicates the section (sec.15) and the letter (M) given the 40-acre subdivision of the section as shown in figure 2. The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in the NW¼SW¼ sec.15, T.25 N., R.43 E., would have the number 25/43-15M1, and the second well would have the number 25/43-15M2 or 25/43E-15M2. See figure 2 below:

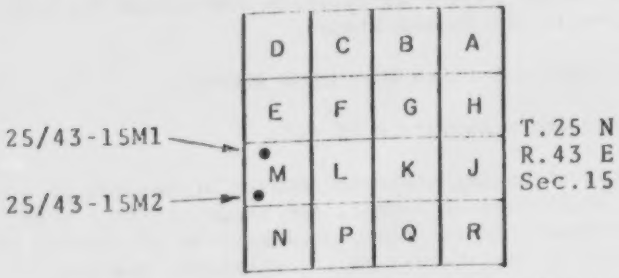


Figure 2. Local identifier well numbering system.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) os a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly samples water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are samples represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), stepbackwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the staion and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lake and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations or revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from most accurate maps available. River mileage given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE", it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR: if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following EXTREMES, for stream-gaging stations where they serve a useful purpose and the dated of applicability can be easily identified.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of field data and computed results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight untake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

All temperature values in the daily tables are rounded to the nearest 0.5°C. Therefore, temperature values published in conjunction with water samples may be 0.1 to 0.2°C outside the range of the values published in the daily tables.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During period of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 1.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

HYDROLOGIC CONDITIONS

The annual mean yearly runoff in western Washington during the 1977 water year ranged generally from about 40 to 70 percent of average in streams at low to medium elevations and from about 50 to 80 percent of average in streams at medium to high elevations. There were few instances of yearly or instantaneous flows below any of record, but some record low monthly flows.

Streamflow at lower elevations was well below average from October through February with some cases of monthly flows at record lows. This was due to below average precipitation throughout the period. The Chehalis River near Grand Mound recorded three consecutive months, December through February, with record low monthly flows based on 49 consecutive years of record. From March through September, streamflow and precipitation at lower elevations followed the same trend, being average in March, below average in April and then average and above June through September.

Streamflow at higher elevations was below normal October and November, caused by below average precipitation, but then the flow increased to the median range during December through April, due to an early snowmelt caused by an increase in temperatures the latter part of December and mid January. Precipitation at higher elevations sustained the flow into April, but the depleted snowpack resulted in below normal flows for May, June and July. Increased precipitation helped the August and September flows to climb into the normal range. Monthly and annual mean discharges are compared with medians at two representative gaging stations in figure 3.

The ground-water level in the key observation well in western Washington was below average December through September with the July reading being a new monthly minimum for 38 years of record.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office. Prices are effective January 1978 but are subject to change.

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. *Water temperature-influential factors, field measurement, and data presentation*, by H. H. Stevens Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages. $1.60.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W.Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages. $0.85

2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages. $1.90.

2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages. $1.75.

3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages. $1.00.

3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages. $0.35.

3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. $0.40.

3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages. $1.00.

3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. $0.35.

3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6, 1968, 13 pages. $1.00.

3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. $1.40.

3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. $1.25.

3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. $1.20.

3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. $0.35. Not currently available.

3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages. $0.70.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2 1976. 172 pages. $2.50.

3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. $0.65.

3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2, 1970. 59 pages. $2.50.

3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. $2.10.

4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. $1.60.

4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. $0.35.

4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972, 18 pages. $0.65.

4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. $0.75.

4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. $0.65.

4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages. $1.10.

5-A1. *Methods for collection and analysis of water samples for dissolved minerals and gases*, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 pages. $2.40.

5-A2. *Determination of minor elments in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages. $0.80.

5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. $0.90.

5-A4.* *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin, B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages. $20.00.

5-A5.* *Methods for determination of radioactive substances in water and fluvial sediments*, by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages. $16.00.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS--Continued

5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. $2.10.

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages. $2.30.

8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages. $0.70.

8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages. $1.10.

*These publications are available ONLY from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. They are in looseleaf format and are subscription items. Additional supplements will be issued to subscribers at no extra cost. Checks should be made payable to Superintendent of Documents. Requester should emphasize to Superintendent of Documents that this is a subscription item.

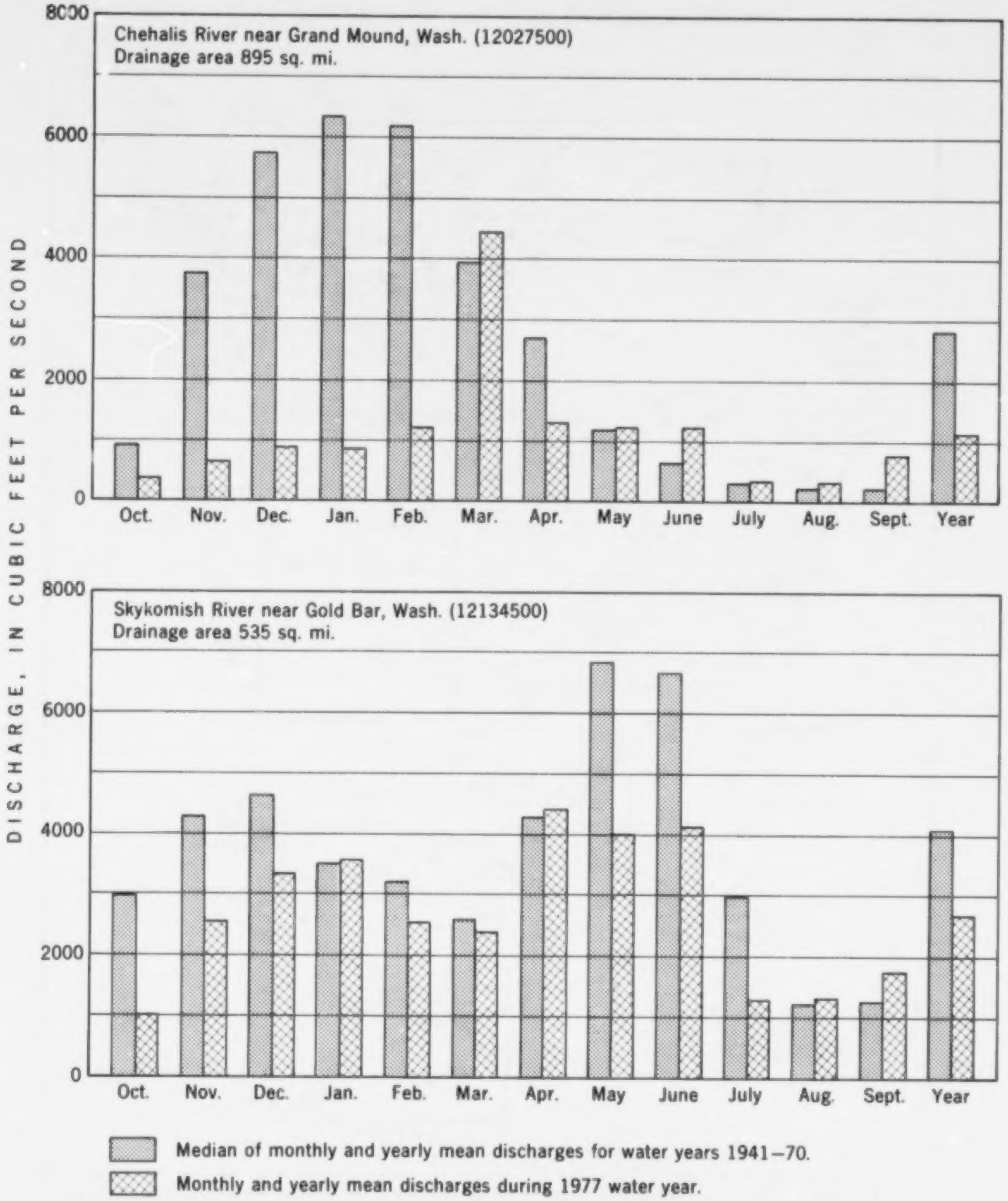


Figure 3. Discharge during 1977 water year compared with median discharge for period 1941–70 for two representative gaging station.

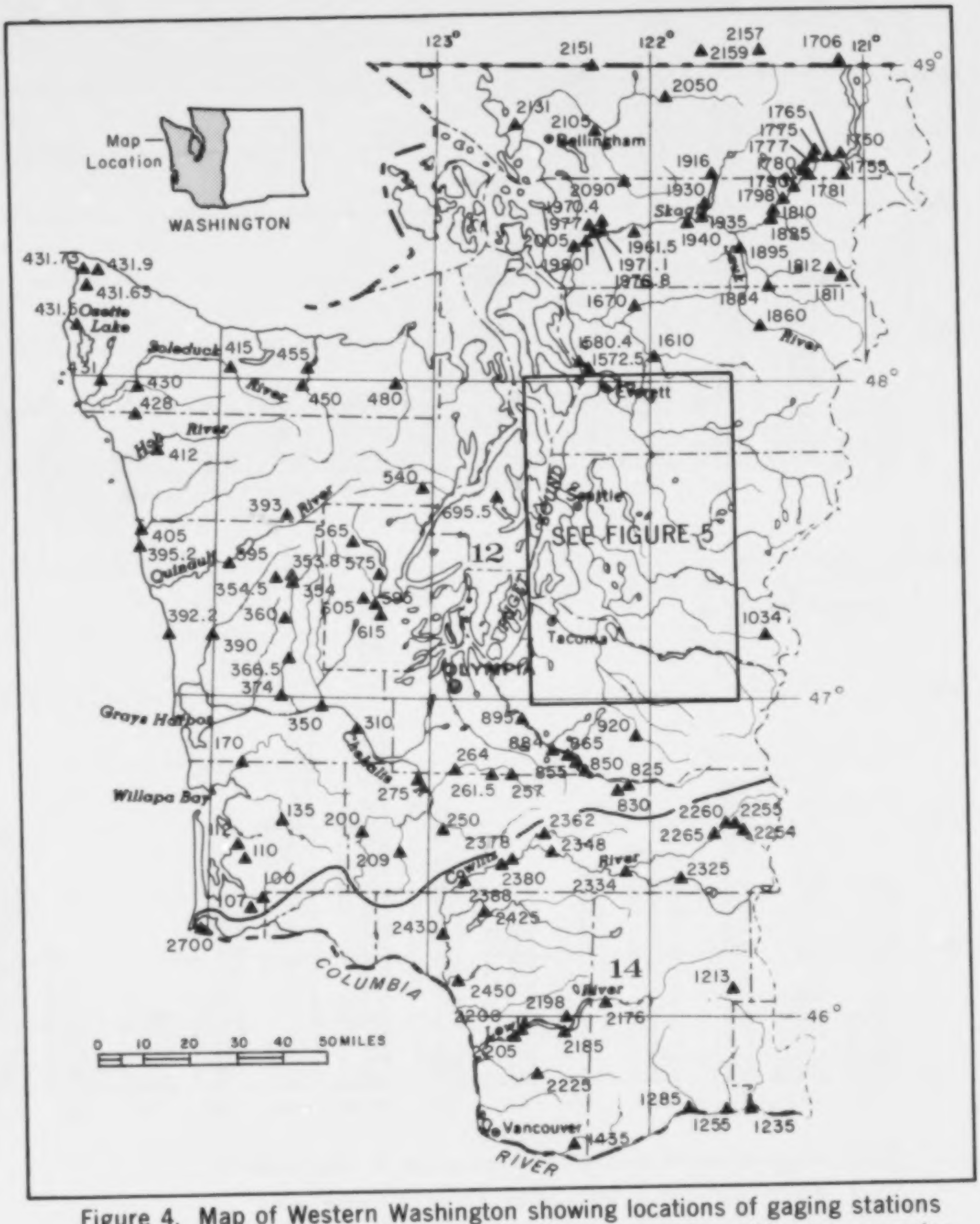

Map Location
WASHINGTON
123°
122°
121°
49°
48°
47°
46°
SEE FIGURE 5
12
14
Bellingham
Everett
Seattle
Tacoma
OLYMPIA
Vancouver
COLUMBIA
RIVER
Grays Harbor
Willapa Bay
Ozette Lake
Soleduck River
Hoh River
Quinault
Chehalis
Cowlitz
Lewis
Skagit
SOUND
0 10 20 30 40 50 MILES

Figure 4. Map of Western Washington showing locations of gaging stations operated by the U.S. Geological Survey in cooperation with other agencies. Numbers shown are abbreviated versions of complete station numbers used in text. Part numbers are the large figures.

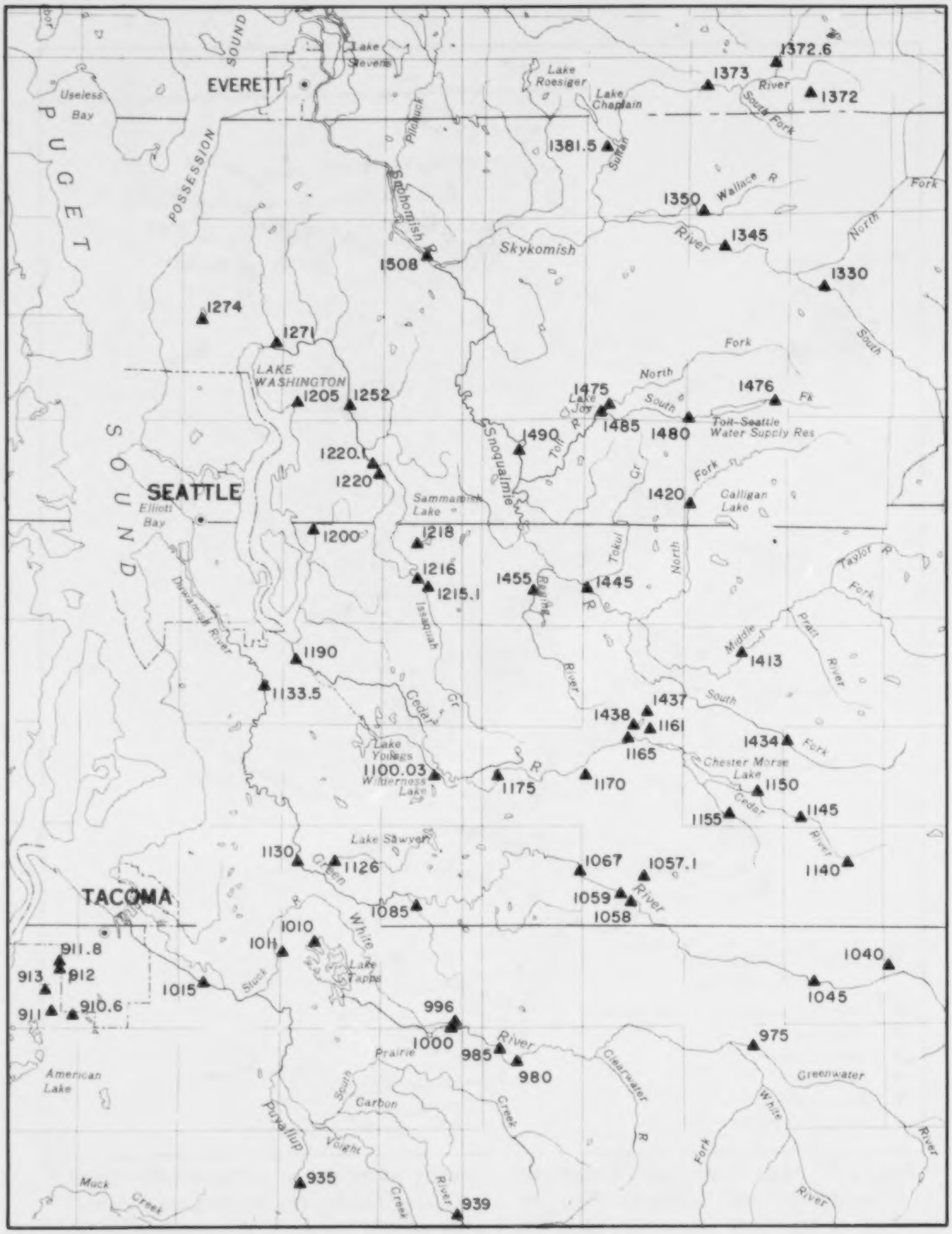

PUGET SOUND
POSSESSION SOUND
Useless Bay
EVERETT
Lake Stevens
Lake Roesiger
Lake Chaplain
Pilchuck
Snohomish R
Skykomish
Sultan
Wallace R
River
North Fork
South Fork
South
Fork
North
Tolt R
Lake Joy
Tolt-Seattle Water Supply Res
Calligan Lake
Snoqualmie
Tokul Cr
Raging
River
Taylor R
Fork
Middle
Pratt River
South Fork
Chester Morse Lake
Cedar River
Cedar Cr
Lake Youngs
Wilderness Lake
Lake Sawyer
Green River
White
Lake Tapps
Stuck
Prairie
South
Carbon
Voight Creek
Puyallup
Clearwater R
Greenwater
White River
Fork
Muck Creek
American Lake
LAKE WASHINGTON
Sammamish Lake
Issaquah
Duwamish River
SEATTLE
Elliott Bay
TACOMA
1372.6
1373
1372
1381.5
1350
1345
1330
1508
1274
1271
1205
1252
1475
1485
1480
1476
1490
1220.1
1220
1420
1200
1218
1216
1215.1
1455
1445
1413
1190
1133.5
1437
1438
1161
1165
1434
1100.03
1175
1170
1150
1155
1145
1140
1130
1126
1067
1057.1
1059
1058
1085
1010
1011
911.8
912
913
911
910.6
1015
1040
1045
996
1000
985
980
975
935
939

Figure 5. Map showing locations of gaging stations in the insert of Figure 4.

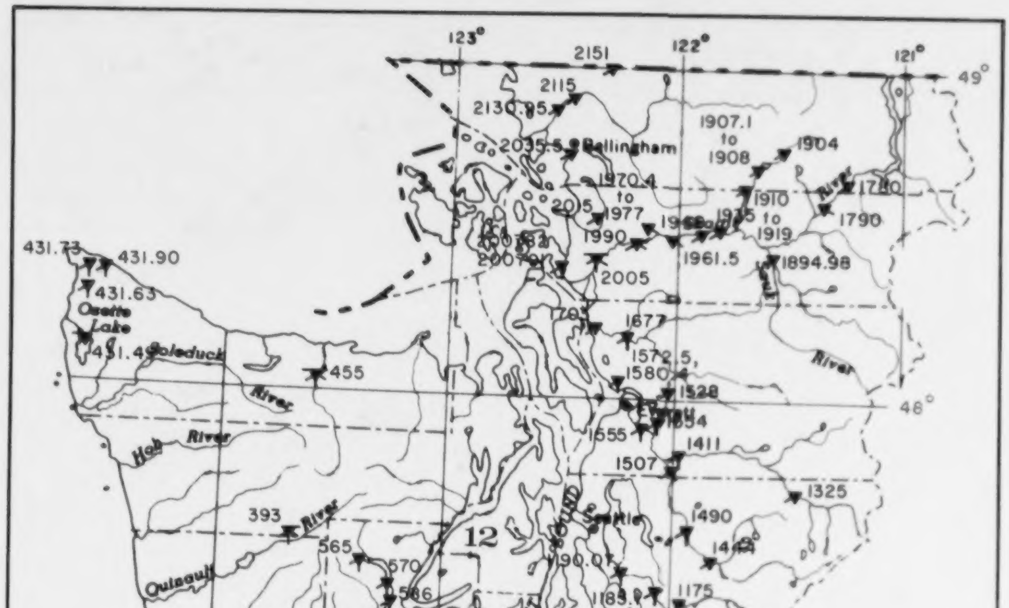

123°
122°
121°
49°
48°
47°
46°
2151
2115
2130.85
2035.5
Bellingham
1907.1
to
1908
1904
1970.4
to
1977
2015
1910
to
1919
1925
1780
1790
1990
1961.5
1894.98
2005
431.73
431.90
431.63
Ozette
Lake
431.4
Soleduck
River
455
1677
1572.5,
1580.4
1528
1554
1555
1411
1507
Hoh
River
1325
393
River
Seattle
1490
565
12
1443
570
Quinault
1190.07
586
1189.8
1175
595
615
1130
1115
Tacoma
1075
380.05
368
Olympia
325
799.8,
800.1
935.1
374
350
310
Grays Harbor
169
895
865
Chehalis
834
267
850
825
Willapa Bay
135
222.5
250
2348.1
2362
111.03
2378
2348
2380
109
2385.5
River
108
100
2380.1
2380.2
2334
95
2509
2390.5
2075
2474
2430
14
0 10 20 30 40 50 MILES
COLUMBIA
2236
River
EXPLANATION
135
Data collection site and number
Chemical
Temperature
Sediment
Biological
Micro-biological
Lewis
2202
2225.5
1285
1235
Vancouver
1289.1
1441
RIVER

Figure 6. Map of Western Washington showing locations of surface-water-quality sampling stations operated by the U.S. Geological Survey in cooperation with other agencies. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

12009500 BEAR BRANCH NEAR NASELLE, WA

LOCATION.--Lat 46°19'48", long 123°54'37", on line between secs.21 and 22, T.10 N., R.10 W., Pacific County, Hydrologic Unit 17100106, 3.4 mi (5.5 km) upstream from bridge on U.S. Highway 101 and 5.3 mi (8.5 km) southwest of Naselle.

DRAINAGE AREA.--11.7 mi² (30.3 km²).

PERIOD OF RECORD.--Water years 1963-66, October 1976 to September 1977 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1963 to September 1966.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT							
04...	1430	11	73	6.9	12.0	--	2
18...	1545	12	75	7.1	10.3	46	6
NOV							
02...	1200	44	70	6.9	10.8	50	5
16...	1125	52	79	7.0	11.0	85	10
DEC							
07...	1200	45	75	7.0	7.5	50	3
14...	1115	35	65	7.0	7.2	33	3
JAN							
04...	1210	44	71	7.1	4.5	27	2
18...	1125	159	61	6.9	9.0	85	29
FEB							
08...	1315	38	70	7.3	6.8	25	1
15...	1210	68	66	7.2	7.2	8	5
MAR							
08...	1245	175	63	6.8	7.8	33	4
22...	1230	71	66	7.0	9.3	33	2
APR							
05...	1145	54	67	7.1	10.3	17	1
19...	1205	33	70	6.5	8.1	29	2
MAY							
03...	1240	54	65	6.7	10.8	65	7
17...	1235	36	70	6.3	10.0	38	3
JUN							
07...	1230	89	62	7.1	12.4	25	2
21...	1230	31	60	6.8	12.2	29	4
JUL							
12...	1230	22	77	7.1	13.3	38	5
26...	1300	14	80	6.9	15.1	--	3
AUG							
09...	1335	11	83	7.1	10.3	33	2
23...	1335	14	85	6.7	15.1	60	4
SEP							
13...	1240	31	70	6.8	12.3	42	3
27...	1245	58	70	6.8	11.7	46	3

DATE	DISSOLVED OXYGEN (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT							
04...	10.3	.00	.01	.02	.11	.01	.00
18...	9.8	.01	.00	.05	.17	.03	.01
NOV							
02...	9.6	.32	.00	.11	.28	.04	.01
16...	9.8	.21	.01	.12	.21	.04	.00
DEC							
07...	11.3	.14	.01	.07	.19	.02	.00
14...	11.5	.20	.01	.04	.10	.01	.00
JAN							
04...	12.2	.31	.00	.04	.12	.01	.00
18...	10.9	.34	.01	.14	.36	.08	.00
FEB							
08...	11.5	.24	.00	.04	.13	.01	.00
15...	11.9	.32	.00	.05	.25	.02	.00
MAR							
08...	11.2	.40	.01	.04	.13	.02	.00
22...	11.0	.26	.00	.05	.11	.02	.01
APR							
05...	11.0	.20	.01	.04	.09	.01	.00
19...	11.8	.14	.00	.07	.08	.01	.00
MAY							
03...	10.7	.12	.01	.06	.16	.03	.00
17...	11.0	.11	.01	.06	.12	.01	.00
JUN							
07...	10.7	.23	.01	.07	.07	.02	.00
21...	10.4	.09	.01	.03	.08	.02	.00
JUL							
12...	10.3	.05	.00	.06	.11	.01	.00
26...	9.5	.06	.00	.05	.09	.01	.00
AUG							
09...	9.8	.06	.00	.04	.10	.02	.00
23...	8.8	.07	.00	.04	.16	.02	.00
SEP							
13...	10.2	.13	.00	.04	.12	.01	.00
27...	11.0	.19	.01	.05	.17	.01	.00

12010000 NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°22'27", long 123°44'32", in SW¼SW¼ sec.1, T.10 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on right bank 0.1 mi (0.2 km) upstream from county highway bridge, 2.2 mi (3.5 km) upstream from Salmon Creek, 3.4 mi (5.5 km) east of Naselle and at mile 17.4 (28.0 km).

DRAINAGE AREA.--54.8 mi² (141.9 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1929 to current year.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1930(M), 1932-40(M), 1945-46(M).

GAGE.--Water-stage recorder. Altitude of gage is 24 ft (7.3 m), by barometer. Prior to Jan. 11, 1957, nonrecording gage and crest-stage gage at site 1,350 ft (411 m) downstream at present datum. Jan. 11, 1957, to Dec. 31, 1961, nonrecording gage and crest-stage gage at site 1,200 ft (366 m) downstream at present datum.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.-48 years, 433 ft³/s (12.26 m³/s) 107.30 in/yr (2,725 mm/yr), 313,700 acre-ft/yr (387 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s (314 ³/s) Jan. 22, 1935, gage height, 15.9 ft (4.85 m) from flood marks, site then in use, from rating curve extended above 4,000 ft³/s (113 m³/s) on basis of slope-area measurement at gage height 15.2 ft (4.63 m); minimum, 18 ft³/s (0.51 m³/s) Aug. 30, 31, Sept. 1, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1900	*3,740	106	*10.63	3.240

Minimum discharge, 27 ft³/s (0.76 m³/s) Aug. 18, gage height, 3.66 ft (1.116 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	225	106	270	312	976	410	111	478	73	36	160
2	51	147	98	264	246	892	361	122	403	74	36	150
3	57	115	95	240	222	922	322	277	371	76	36	228
4	49	98	91	219	210	730	294	305	506	77	36	506
5	47	87	87	199	196	580	267	301	470	76	35	364
6	46	81	91	185	185	550	246	264	406	84	34	267
7	44	74	122	174	174	2040	231	237	358	68	34	216
8	43	71	330	163	166	2430	222	216	315	63	33	185
9	43	67	367	152	163	2020	228	196	280	61	32	160
10	50	64	261	145	305	1220	210	182	255	59	32	142
11	51	62	225	160	414	860	196	177	234	61	31	127
12	47	61	204	190	560	755	182	168	216	62	30	115
13	44	59	188	202	585	635	207	160	199	62	29	104
14	43	89	179	190	462	570	188	166	185	57	30	98
15	43	150	185	249	385	514	193	177	174	56	31	95
16	42	163	171	284	354	462	196	188	160	56	29	96
17	42	333	179	294	315	418	185	188	147	58	29	93
18	41	305	202	347	280	406	177	182	137	56	28	106
19	40	225	185	350	258	371	166	168	129	51	29	210
20	40	190	174	315	315	343	158	158	127	49	29	258
21	40	174	166	284	358	364	155	168	124	47	30	243
22	40	152	166	258	426	371	152	150	122	46	30	202
23	39	137	202	237	382	378	139	142	111	44	41	199
24	50	150	177	219	336	399	129	147	102	44	82	190
25	163	177	213	204	414	378	127	137	98	42	246	216
26	98	145	865	193	450	482	166	202	95	42	137	207
27	71	132	720	179	535	898	150	225	85	42	79	185
28	67	122	514	168	810	760	132	450	84	42	129	171
29	63	115	414	160	---	630	124	389	81	42	240	160
30	57	111	350	150	---	518	117	326	76	41	522	155
31	210	---	305	246	---	458	---	382	---	39	237	---
TOTAL	1808	4081	7610	6890	9818	23330	6030	6653	6520	1744	2412	5608
MEAN	58.3	136	245	222	351	753	201	215	218	56.3	77.8	187
MAX	210	333	865	350	810	2430	410	450	506	84	522	506
MIN	39	59	87	145	163	343	117	111	76	39	28	93
CFSM	1.06	2.48	4.47	4.05	6.41	13.7	3.67	3.92	3.98	1.03	1.42	3.41
IN.	1.23	2.77	5.17	4.68	6.66	15.86	4.09	4.52	4.43	1.18	1.64	3.81
AC-FT	3590	8090	15090	13670	19470	46280	11960	13200	12950	3460	4780	11120

CAL YR 1976 TOTAL 109471 MEAN 299 MAX 4680 MIN 39 CFSM 5.46 IN 74.31 AC-FT 217100
WTR YR 1977 TOTAL 82512 MEAN 226 MAX 2430 MIN 28 CFSM 4.12 IN 56.01 AC-FT 163700

12010000 NASELLE RIVER NEAR NASELLE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken 1,350 ft (411 m) downstream from gaging station.

PERIOD OF RECORD.--Water years 1963-73, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1963 to September 1973.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)
OCT										
04...	1530	48	65	7.2	11.8	--	2	11.1	.04	.00
18...	1640	41	65	7.6	9.2	33	5	11.5	.02	.01
NOV										
02...	1300	145	64	7.3	10.1	33	4	11.3	.43	.00
16...	1225	177	64	7.3	10.4	58	4	10.8	.35	.00
DEC										
07...	1300	120	68	7.4	7.1	25	1	12.4	.34	.00
14...	1215	177	60	7.4	7.5	17	2	12.4	.47	.01
JAN										
04...	1310	216	65	7.3	5.0	13	1	12.9	.59	.00
18...	1240	368	60	7.0	8.0	21	3	11.6	.51	.00
FEB										
08...	1430	166	65	7.7	6.3	8	1	12.3	.44	.00
15...	1315	386	57	7.4	7.3	13	4	11.8	.63	.01
MAR										
08...	1345	2100	52	7.0	7.4	68	30	11.5	.69	.01
22...	1325	364	60	7.4	8.5	17	1	12.2	.80	.00
APR										
05...	1240	267	62	7.4	10.5	8	1	11.2	.41	.00
19...	1320	166	65	7.4	8.1	17	1	12.3	.31	.00
MAY										
03...	1325	308	58	7.0	10.5	25	6	10.4	.23	.00
17...	1345	193	60	6.7	10.0	13	2	11.7	.32	.00
JUN										
07...	1330	358	60	7.6	13.0	13	1	11.3	.43	.00
21...	1325	124	62	7.4	12.8	17	1	11.0	.23	.01
JUL										
12...	1330	62	68	7.8	14.7	21	1	10.9	.14	.00
26...	1445	42	65	7.6	18.0	21	1	9.7	.10	.00
AUG										
09...	1445	32	70	7.5	21.2	17	1	10.4	.10	.00
23...	1445	40	82	7.0	16.2	42	2	9.4	.05	.00
SEP										
13...	1400	104	65	7.5	14.6	42	2	10.8	.28	.00
27...	1400	185	65	6.9	11.8	4	2	11.7	.35	.01

DATE	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT									
04...	.02	.14	.01	.00	0	4	10	.0	0
18...	.03	.10	.01	.00	0	1	11	.0	0
NOV									
02...	.06	.18	.01	.00	0	1	7	.0	10
16...	.06	.18	.02	.00	0	0	10	.0	0
DEC									
07...	.05	.11	.01	.00	0	9	13	.1	20
14...	.03	.08	.01	.00	0	0	2	.0	10
JAN									
04...	.04	.11	.01	.00	0	2	13	.0	10
18...	.04	.36	.02	.00	0	0	12	.3	0
FEB									
08...	.02	.10	.01	.00	0	1	6	.0	0
15...	.03	.16	.02	.01	0	0	21	.1	0
MAR									
08...	.08	.27	.10	.01	0	0	9	.6	0
22...	.14	.18	.01	.01	0	2	19	.0	10
APR									
05...	.03	.06	.01	.01	10	0	5	.0	0
19...	.06	.06	.01	.00	0	0	22	.0	0
MAY									
03...	.03	.16	.02	.00	0	0	19	.0	5
17...	.04	.12	.01	.00	0	1	5	.1	0
JUN									
07...	.07	.15	.01	.00	0	0	3	.8	0
21...	.03	.09	.01	.00	0	0	8	.0	0
JUL									
12...	.05	.14	.01	.01	0	1	10	.0	2
26...	.05	.11	.01	.00	0	0	8	.1	0
AUG									
09...	.05	.14	.02	.00	0	0	5	.0	0
23...	.03	.15	.02	.00	0	2	13	.0	0
SEP									
13...	.02	.12	.01	.00	0	0	1	.0	0
27...	.02	.10	.01	.00	0	1	4	.0	0

12010700 SOUTH FORK NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°20'39", long 123°48'23", in SW¼SW¼ sec.16, T.10 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on left bank 25 ft (8 m) downstream from private road bridge, 1,800 ft (550 m) downstream from Davis Creek, 1.4 mi (2.3 km) south of Naselle.

DRAINAGE AREA.--17.9 mi² (46.4 km²).

PERIOD OF RECORD.-- June 1964 to September 1975, water year 1976 (annual maximum), October 1976 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Records excellent. No diversion above station. Some minor regulation during period of low flow.

AVERAGE DISCHARGE.--12 years, (water years 1965-75, 1977) 131 ft³/s (3.710 m³/s), 99.38 in/yr (2,524 mm/yr), 94,910 acre-ft/yr (117 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,890 ft³/s (110 m³/s) Dec. 1, 1975, gage height, 10.09 ft (3.075 m), from high-water mark in well, from rating curve extended above 1,100 ft³/s (31.2 m³/s) on basis of slope area measurement of peak flow; minimum, 1.3 ft³/s (0.037 m³/s) Aug. 27, 28, 29, 1967; minimum gage height, 1.02 ft (0.311 m) Aug. 18, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Sept. 4	0600	*685	19.4	*4.95	1.509

Minimum discharge, 3.4 ft³/s (0.096 m³/s) Aug. 18, gage height, 1.02 ft (0.311 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	81	30	69	127	425	104	21	209	13	5.0	70
2	13	57	29	79	92	377	84	24	154	13	5.0	91
3	12	46	28	67	79	395	76	70	157	15	5.0	120
4	11	39	26	58	71	250	73	64	287	15	5.0	400
5	11	34	25	53	64	173	55	57	200	16	5.0	202
6	10	30	26	48	59	165	49	49	149	15	4.8	129
7	9.9	28	67	46	54	348	45	46	116	12	4.8	95
8	9.5	25	87	42	47	363	44	41	93	11	4.8	73
9	9.2	23	72	40	46	320	46	38	77	11	4.4	62
10	13	22	59	37	73	220	41	35	65	11	4.3	56
11	13	20	52	45	88	180	38	35	57	11	4.1	52
12	10	19	47	72	228	189	35	31	50	12	3.8	39
13	9.2	18	44	76	189	159	45	30	45	11	3.8	36
14	8.8	53	42	72	138	177	36	32	41	9.9	4.0	33
15	8.5	79	60	159	108	195	41	44	37	9.2	4.3	31
16	8.2	80	50	175	102	163	40	48	34	9.2	3.8	31
17	7.8	152	70	160	87	143	36	42	30	11	3.8	20
18	7.5	123	72	200	76	125	33	38	28	9.2	3.5	44
19	6.8	91	63	177	66	95	31	34	26	8.2	3.8	82
20	6.8	72	58	144	106	82	30	32	26	7.5	4.0	71
21	6.8	64	54	119	115	101	33	41	28	7.5	4.0	64
22	6.8	54	52	102	113	101	37	33	26	6.8	4.0	54
23	6.8	47	66	90	102	118	30	30	21	6.6	9.5	58
24	22	51	54	76	95	126	28	31	20	6.4	27	59
25	67	59	138	73	177	108	26	30	18	6.4	46	82
26	30	44	470	67	160	198	33	59	17	6.4	30	73
27	21	40	256	61	262	395	28	70	16	6.1	21	62
28	24	37	168	55	437	287	25	133	15	6.1	80	58
29	22	35	123	50	---	204	24	102	15	5.9	113	98
30	18	33	97	46	---	154	22	91	14	5.7	268	72
31	106	---	80	126	---	129	---	207	---	5.3	101	---
TOTAL	527.6	1556	2545	2684	3361	6473	1268	1638	2071	299.4	790.5	2417
MEAN	17.0	51.9	82.1	86.6	120	209	42.3	52.8	69.0	9.66	25.5	80.6
MAX	106	152	470	200	437	425	104	207	287	16	268	400
MIN	6.8	18	25	37	46	82	22	21	14	5.3	3.5	20
CFSM	.95	2.90	4.59	4.84	6.70	11.7	2.36	2.95	3.86	.54	1.43	4.50
IN.	1.10	3.23	5.29	5.58	6.98	13.45	2.64	3.40	4.30	.62	1.64	5.02
AC-FT	1050	3090	5050	5320	6670	12840	2520	3250	4110	594	1570	4790

WTR YR 1977 TOTAL 25630.5 MEAN 70.2 MAX 470 MIN 3.5 CFSM 3.92 IN 53.26 AC-FT 50840

12010630 SOUTH NEMAH RIVER NEAR NEMAH, WA

LOCATION.--Lat 46°[illegible]2'33", long 123°53'01", in SW¼SW¼ sec.35, T.12 N., R.10 W.,Pacific County, Hydrologic Unit 17100106, at U.S. Highway 101 crossing, 2.5 mi (4.0 km) south of Nemah.

DRAINAGE AREA.--6.72 mi² (17.4 km²).

PERIOD OF RECORD.--October 1976 to September 1977 (discontinued).

REMARKS.--No discharge records available.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)
OCT							
04...	1350	64	6.7	11.3	--	4	9.2
18...	1500	72	7.0	8.8	150	9	9.8
NOV							
02...	1110	56	6.7	10.2	115	4	9.5
16...	1030	55	6.6	10.3	200	8	9.5
DEC							
07...	1100	58	6.9	6.2	85	5	11.5
14...	1030	55	6.9	6.9	70	4	11.4
JAN							
04...	1120	57	6.8	4.0	60	2	12.1
18...	1035	50	6.4	8.3	85	10	10.5
FEB							
08...	1215	62	7.1	6.2	60	2	11.0
15...	1135	55	7.0	6.6	46	4	11.2
MAR							
08...	1150	50	6.6	7.4	85	10	11.7
22...	1145	57	6.8	8.0	70	7	11.4
APR							
05...	1040	55	6.8	8.6	50	2	10.4
19...	1125	60	6.4	7.7	70	3	11.1
MAY							
03...	1205	54	6.3	10.3	120	25	10.2
17...	1150	60	6.2	9.7	85	6	10.6
JUN							
07...	1145	45	6.8	12.5	50	7	10.1
21...	1145	59	6.7	12.2	80	4	9.7
JUL							
12...	1145	65	7.2	13.4	120	6	9.5
26...	1215	70	6.8	14.2	--	5	8.6
AUG							
09...	1230	75	6.9	16.6	180	6	8.6
23...	1215	77	6.6	15.3	210	8	7.7
SEP							
13...	1155	55	6.4	12.3	85	4	9.6
27...	1155	56	6.3	11.5	100	4	10.1

12010900 MIDDLE NEMAH RIVER NEAR NEMAH, WA

LOCATION.--Lat 46°29'38", long 123°53'12", in NE¼SE¼ sec.27, T.12 N., R.10 W., Pacific County, Hydrologic Unit 17100106, at U.S. Highway 101 crossing, 1.2 mi (1.9 km) south of Nemah.

PERIOD OF RECORD.--October 1976 to September 1977 (discontinued).

DRAINAGE AREA.--11.6 mi² (30.0 km²).

REMARKS.--No discharge records available.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)
OCT							
04...	1340	50	7.1	11.5	--	2	10.2
18...	1445	55	7.2	9.5	65	4	10.6
NOV							
02...	1100	46	6.8	9.8	100	3	10.1
16...	1015	47	6.9	10.6	150	5	9.9
DEC							
07...	1045	50	7.1	7.0	60	2	11.0
14...	1020	48	6.9	7.3	55	3	12.3
JAN							
04...	1105	50	7.1	3.6	55	1	12.7
18...	1025	42	6.7	8.0	80	4	10.8
FEB							
08...	1200	51	7.3	6.4	42	1	11.6
15...	1115	42	7.5	6.5	29	2	11.8
MAR							
08...	1145	45	6.5	7.1	65	4	11.3
22...	1140	45	7.2	8.2	60	2	11.8
APR							
05...	1025	46	6.9	8.6	29	1	11.0
19...	1120	48	6.8	7.9	42	2	11.7
MAY							
03...	1200	41	6.5	10.3	120	5	10.8
17...	1135	45	6.7	10.2	65	2	11.1
JUN							
07...	1125	40	7.0	13.1	45	3	10.4
21...	1130	51	6.7	12.9	45	4	10.3
JUL							
12...	1135	55	7.3	13.7	45	2	10.5
26...	1200	59	6.8	14.8	--	1	9.4
AUG							
09...	1210	64	7.1	16.1	50	2	10.4
23...	1150	102	6.6	15.3	65	3	9.2
SEP							
13...	1140	49	6.7	12.8	60	3	10.2
27...	1140	47	6.5	11.6	75	2	10.7

12011000 NORTH NEMAH RIVER NEAR SOUTH BEND, WA

LOCATION.--Lat 46°29'29", long 123°49'59", in SE¼ sec.30, T.12 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on right bank 600 ft (183 m) downstream from Finn Creek, 5 mi (8.04 km) upstream from mouth, and 12 mi (19.3 km) south of South Bend.

DRAINAGE AREA.-- 18.0 mi² (46.6 km²).

PERIOD OF RECORD.--February 1946 to September 1954, water years 1955-58, 1960-61 (annual maximum), July 1964 to September 1968, October 1976 to September 1977 (discontinued). Water temperatures August 1970 to September 1971.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (18 m), from topographic map. Prior to Oct. 1, 1954, water-stage recorder, and water years 1955-58, 1960-61 crest-stage gage, at site 100 ft (30 m) upstream at different datum; July 1964 to September 1968, water-stage recorder 100 ft (30 m) downstream at datum 1.97 ft (0.600 m) lower.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--13 years (water years 1947-54, 1965-68, 1977), 117 ft³/s (3.313 m³/s), 88.27 in/yr (2,242 mm/yr), 84,770 acre-ft/yr (105 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,000 ft³/s (56.6 m³/s) Jan. 28, 1965, gage height, 9.00 ft (2.743 m) site and datum then in use; minimum, 4.7 ft³/s (0.13 m³/s) Sept. 21, 22, 23, 1951.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 930 ft³/s (26.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1800	*1,080	30.6	*4.79	1.460

Minimum discharge, 9.0 ft³/s (0.25 m) Aug. 17, 18, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	53	25	65	84	322	101	31	161	24	13	69
2	25	33	24	71	61	288	87	34	115	24	12	55
3	24	27	23	59	54	284	79	87	107	25	12	72
4	20	24	23	53	50	215	73	82	113	25	12	135
5	19	22	22	47	47	166	67	75	111	25	12	93
6	17	21	23	44	44	170	63	65	96	23	12	73
7	16	19	31	41	41	610	59	59	85	22	12	60
8	15	19	79	38	39	713	58	54	75	21	12	52
9	14	18	67	36	38	556	59	51	67	21	11	46
10	17	17	50	35	82	327	53	49	60	20	11	41
11	16	16	44	38	85	242	52	47	55	21	10	37
12	15	16	39	48	127	230	49	44	52	23	10	35
13	14	16	37	55	125	201	55	43	49	21	9.8	32
14	14	25	36	46	103	181	49	43	47	20	10	31
15	13	45	38	65	87	163	48	48	46	20	10	29
16	13	50	35	65	82	139	47	49	45	19	9.8	30
17	12	106	40	69	71	124	46	53	43	21	9.4	30
18	12	80	43	91	62	122	44	49	41	19	9.0	35
19	11	56	38	87	56	107	43	46	39	18	9.8	68
20	11	46	35	79	98	98	42	44	37	17	9.8	64
21	11	43	34	71	127	103	41	46	35	17	9.8	40
22	12	38	37	63	160	99	41	43	35	17	9.8	49
23	11	34	46	57	125	107	38	43	31	16	18	48
24	18	37	38	52	105	114	36	42	30	16	25	45
25	47	42	55	48	141	106	35	42	30	15	65	58
26	23	33	262	45	135	139	43	57	28	16	31	51
27	17	31	178	42	146	240	38	68	27	15	21	45
28	18	29	130	39	277	195	35	141	26	15	31	42
29	16	28	105	37	---	149	35	103	25	15	78	40
30	15	27	86	35	---	122	32	85	24	14	179	40
31	73	---	73	85	---	111	---	122	---	13	71	---
TOTAL	578	1051	1796	1706	2652	6743	1548	1845	1735	598	755.2	1545
MEAN	18.6	35.0	57.9	55.0	94.7	218	51.6	59.5	57.8	19.3	24.4	51.5
MAX	73	106	262	91	277	713	101	141	161	25	179	135
MIN	11	16	22	35	38	98	32	31	24	13	9.0	29
CFSM	1.03	1.94	3.22	3.06	5.26	12.1	2.87	3.31	3.21	1.07	1.36	2.86
IN.	1.19	2.17	3.71	3.53	5.48	13.93	3.20	3.81	3.59	1.24	1.56	3.19
AC-FT	1150	2080	3560	3380	5260	13370	3070	3660	3440	1190	1500	3060

WTR YR 1977 TOTAL 22552.2 MEAN 61.8 MAX 713 MIN 9.0 CFSM 3.43 IN 46.61 AC-FT 44730

12011103 NORTH NEMAH RIVER NEAR NEMAH, WA

LOCATION.--Lat 46°30'50", long 123°51'42", in NW¼NW¼ sec.24, T.12 N., R.10 W., Pacific County, Hydrologic Unit 17100106, at bridge 1.4 mi (2.3 km) east of U.S. Highway 101 and Nemah Junction.

DRAINAGE AREA.--21.5 mi² (55.7 km²).

PERIOD OF RECORD.--Water years 1973, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT							
04...	1325	16	72	7.6	11.8	--	3
18...	1430	14	79	7.3	9.6	29	6
NOV							
02...	1045	45	73	7.1	10.2	58	4
16...	0950	65	72	7.2	10.8	85	8
DEC							
07...	1025	36	78	7.2	7.5	33	3
14...	1010	46	72	7.3	8.0	29	2
JAN							
04...	1045	61	76	7.2	4.7	20	1
18...	1005	90	69	7.0	9.0	42	3
FEB							
08...	1145	60	74	7.5	6.8	21	1
15...	1100	94	69	7.3	7.4	21	3
MAR							
08...	1130	660	60	6.8	7.6	46	20
22...	1115	102	59	7.3	8.6	25	2
APR							
05...	1000	81	72	7.2	8.9	13	1
19...	1105	50	75	7.0	8.4	21	2
MAY							
03...	1145	112	65	6.8	10.4	65	10
17...	1115	62	72	7.2	10.1	29	4
JUN							
07...	1115	90	65	7.3	12.5	21	4
21...	1115	41	75	7.1	12.4	17	7
JUL							
12...	1120	25	75	7.3	13.7	29	3
26...	1130	16	80	7.2	15.1	--	6
AUG							
09...	1145	12	82	7.2	17.0	25	4
23...	1120	14	84	6.8	15.5	46	3
SEP							
13...	1120	37	75	6.9	12.9	29	3
27...	1120	56	75	6.8	11.7	29	3

DATE	DISSOLVED OXYGEN (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT							
04...	10.2	.02	.01	.03	.14	.02	.00
18...	10.3	.02	.01	.04	.15	.02	.01
NOV							
02...	10.2	.30	.00	.12	.22	.03	.01
16...	9.7	.22	.01	.11	.20	.04	.01
DEC							
07...	11.0	.23	.01	.09	.16	.02	.01
14...	11.2	.32	.01	.08	.12	.02	.00
JAN							
04...	12.2	.43	.01	.06	.12	.03	.00
18...	10.6	.40	.00	.06	.17	.03	.00
FEB							
08...	11.4	.31	.02	.04	.09	.02	.00
15...	11.0	.95	.00	.05	.23	.02	.01
MAR							
08...	11.0	.58	.02	.08	.41	.10	.00
22...	11.8	.38	.00	.07	.18	.02	.01
APR							
05...	10.9	.36	.00	.04	.15	.02	.01
19...	11.5	.19	.01	.04	.08	.01	.01
MAY							
03...	10.7	.22	.01	.07	.36	.06	.00
17...	11.0	.23	.01	.07	.20	.01	.00
JUN							
07...	10.3	.23	.00	.06	.19	.02	.01
21...	10.2	.19	.01	.08	.10	.02	.01
JUL							
12...	10.0	.12	.00	.08	.17	.03	.01
26...	9.0	.16	.00	.08	.14	.02	.01
AUG							
09...	9.5	.17	.01	.06	.14	.04	.00
23...	8.6	.20	.01	.05	.18	.04	.01
SEP							
13...	9.7	.24	.01	.06	.10	.02	.01
27...	10.5	.26	.01	.06	.17	.02	.00

12011200 WILLIAMS CREEK NEAR SOUTH BEND, WA

LOCATION.--Lat 46°31'49", long 123°51'39", in NW¼NW¼ sec.13, T.12 N., R.10 W., Pacific County, Hydrologic Unit 17100106, on left bank 0.1 mi (0.2 km) upstream from unnamed tributary, 1.5 mi (2.4 km) upstream from mouth, and 10 mi (16 km) southwest of South Bend.

DRAINAGE AREA.--9.43 mi² (24.42 km²).

PERIOD OF RECORD.--July 1964 to September 1974, water years 1975-76 (annual maximum), October 1976 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (18 km), from topographic map.

REMARKS.--Records good. No known diversion or regulation above station.

AVERAGE DISCHARGE.--11 years (water years 1965-74, 1977) 63.8 ft³/s (1.807 m³/s), 91.88 in/yr (2,334 mm/yr), 46,220 acre-ft/yr (57.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,660 ft³/s (47.0 m³/s) Dec. 1, 1975, gage height, 6.34 ft (1.932 m) from rating curve extended above 440 ft³/s (12.5 m³/s) on basis of step-backwater computation; minimum daily, 6.8 ft³/s (0.19 m³/s) Sept. 27, 28, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1800	*290	8.21	*3.28	1.000

Minimum discharge, 9.1 ft³/s (0.26 m³/s) Oct. 23, gage height, 1.64 ft (0.500 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	23	17	27	34	102	60	25	71	21	14	25
2	12	19	17	27	28	87	55	27	58	21	13	28
3	12	17	17	25	26	92	51	45	53	22	14	31
4	12	16	17	24	25	72	49	41	56	22	14	55
5	11	15	17	23	24	60	47	44	53	22	13	37
6	11	17	17	22	23	61	44	39	45	23	13	32
7	11	15	19	22	22	179	42	34	42	20	13	27
8	11	14	29	22	22	195	42	31	39	19	13	26
9	11	14	28	21	22	168	42	30	36	18	13	26
10	13	14	23	21	36	105	41	29	34	18	12	23
11	13	14	21	22	39	84	41	28	33	19	12	20
12	11	14	19	24	55	93	38	27	32	18	12	21
13	11	14	18	27	55	84	37	27	31	18	12	20
14	11	15	19	25	41	76	36	27	30	17	12	20
15	10	19	18	32	35	69	36	28	29	17	12	19
16	10	21	17	32	33	61	34	29	28	17	12	19
17	10	34	19	30	31	55	33	31	27	19	12	20
18	9.6	28	20	38	29	56	32	30	27	17	12	22
19	9.6	22	19	36	27	56	31	28	27	17	12	28
20	9.6	21	18	32	41	53	30	27	27	16	12	33
21	9.6	21	17	29	50	58	30	28	27	15	12	30
22	9.6	20	19	27	58	58	29	27	27	15	12	25
23	9.6	19	22	26	48	61	28	26	25	15	20	26
24	12	20	19	25	41	63	27	27	24	15	21	22
25	22	22	24	24	51	58	27	27	23	15	51	27
26	13	20	76	23	51	72	30	32	22	15	25	24
27	11	20	53	22	53	125	27	37	22	15	19	22
28	11	19	40	22	87	93	27	65	22	15	27	21
29	10	19	33	22	---	79	26	51	22	14	60	19
30	9.6	19	30	21	---	68	26	42	21	14	87	17
31	27	---	27	33	---	64	---	58	---	14	34	---
TOTAL	365.2	565	747	807	1085	2607	1092	1047	1010	543	620	759
MEAN	11.8	18.8	24.1	26.0	38.8	84.1	36.4	33.8	33.7	17.5	20.0	25.3
MAX	27	34	76	38	87	195	60	65	71	23	87	55
MIN	9.6	14	17	21	22	53	26	25	21	14	12	17
CFSM	1.25	1.99	2.56	2.76	4.12	8.92	3.86	3.58	3.57	1.86	2.12	2.68
IN.	1.44	2.23	2.95	3.18	4.28	10.28	4.31	4.13	3.98	2.14	2.45	2.99
AC-FT	724	1120	1480	1600	2150	5170	2170	2080	2000	1080	1230	1510

WTR YR 1977 TOTAL 11247.2 MEAN 30.8 MAX 195 MIN 9.6 CFSM 3.27 IN 44.36 AC-FT 22310

12013500 WILLAPA RIVER NEAR WILLAPA, WA

LOCATION.--Lat 46°39'04", long 123°39'05", in SW¼SW¼ sec.35, T.14 N., R.8 W., Pacific County, Hydrologic Unit 17100106, on right bank 2,150 ft (655 m) downstream from Mill Creek, 1.8 mi (2.9 km) southeast of Willapa, and at mile 17.8 (28.6 km).

DRAINAGE AREA.--130 mi² (337 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1947, July 1948 to December 1954, water years 1955-56, 1958-59 (annual maximum), April 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3.57 ft (1.088 m) above mean sea level. Aug. 26, to Oct. 16, 1947, water-stage recorder at site 2,060 ft (628 m) upstream at different datum. July 28, 1948 to Dec. 2, 1954, water-stage recorder, water years 1955-56, 1958-59, nonrecording gage and Apr.1, 1961 to Apr. 14, 1974, water-stage recorder at site 2,000 ft (610 m) upstream at datum 2.12 ft (0.646 m) higher.

REMARKS.--Records good. Some diversion for domestic use and irrigation above station. No regulation.

AVERAGE DISCHARGE.--22 years (water years 1949-1954, 1962-1977), 658 ft³/s (18.63 m³/s), 68.74 in/yr (1,746 mm/yr), 476,700 acre-ft/yr (588 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s (323 m³/s) Feb. 22, 1949, Dec. 13, 1966, from rating curve extended above 7,300 ft³/s (207 m³/s); maximum gage height, 24.22 ft (7.382 m) Feb. 22, 1949, site and datum then in use; minimum discharge, 13 ft³/s (0.37 m³/s) Aug. 20, 1967, minimum gage height, 2.87 ft (0.875 m) Aug. 18-21, 23-25, 31, Sept. 1, 1970, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	2300	*6,780	192	*16.77	5.111

Minimum discharge, 24 ft³/s (0.68 m³/s) Aug. 13, 14, 15, 18, 19, 20, gage height, 3.14 ft (0.957 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	315	92	277	280	1590	656	154	614	81	35	197
2	40	175	88	287	209	1320	569	155	512	80	33	159
3	44	131	85	265	188	1260	509	392	440	81	32	215
4	46	109	82	231	175	982	455	448	518	84	31	446
5	44	96	81	209	168	823	410	470	497	84	30	380
6	41	85	80	191	161	792	372	395	410	102	30	257
7	39	80	84	170	152	3570	345	332	352	85	30	203
8	39	76	267	163	146	5030	327	300	318	74	30	172
9	39	73	392	150	145	4610	337	272	285	71	31	150
10	39	69	231	154	325	2350	320	247	255	71	30	135
11	42	66	181	164	584	1610	292	241	235	68	27	120
12	43	63	168	203	584	1470	267	223	221	68	25	111
13	40	60	152	223	617	1200	292	207	205	70	25	103
14	39	61	143	219	491	1040	280	209	195	68	24	96
15	38	99	141	237	410	911	265	221	186	65	24	92
16	37	122	130	272	367	788	267	223	177	60	25	96
17	37	237	130	257	335	683	253	213	163	61	25	101
18	36	322	152	287	297	662	245	207	148	62	24	101
19	35	201	141	302	272	617	231	193	141	59	24	186
20	34	163	130	270	340	557	219	181	136	55	24	395
21	34	166	125	245	524	545	209	181	136	52	25	370
22	34	133	127	225	788	548	207	175	133	50	27	287
23	33	120	223	209	690	563	173	163	123	47	37	249
24	38	112	190	197	584	623	184	161	114	45	109	255
25	163	154	184	186	644	599	179	155	108	41	392	282
26	143	120	943	177	778	596	209	199	103	40	231	280
27	91	114	946	170	795	1200	199	227	96	41	130	237
28	73	106	611	161	1200	1100	179	593	94	40	119	213
29	69	101	473	155	---	984	168	500	91	40	211	207
30	62	96	377	148	---	827	161	375	87	39	653	193
31	155	---	318	179	---	715	---	309	---	39	302	---
TOTAL	1695	3813	7434	6582	12249	40269	8790	8393	7093	1923	2795	6288
MEAN	54.7	127	240	213	437	1299	293	271	236	62.0	90.2	210
MAX	163	322	946	302	1200	5030	656	593	614	102	653	446
MIN	33	60	80	148	145	545	161	154	87	39	24	92
CFSM	.42	.98	1.85	1.64	3.36	9.99	2.25	2.08	1.82	.48	.69	1.62
IN.	.49	1.09	2.13	1.89	3.51	11.52	2.52	2.40	2.03	.55	.80	1.80
AC-FT	3360	7560	14750	13060	24300	79870	17440	16650	14070	3810	5540	12470

CAL YR 1976 TOTAL 161670 MEAN 442 MAX 7080 MIN 33 CFSM 3.40 IN 46.26 AC-FT 320700
WTR YR 1977 TOTAL 107334 MEAN 294 MAX 5030 MIN 24 CFSM 2.26 IN 30.72 AC-FT 212900

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At Bullard Bridge, 0.5 mi (0.8 km) downstream from gaging station and Mill Creek.

PERIOD OF RECORD.--Water years 1966-1973, 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)
OCT										
04...	1225	50	74	7.2	12.8	--	2	10.1	.03	.01
18...	1330	37	115	7.4	10.2	55	4	10.6	.00	.01
NOV										
02...	0950	174	70	7.1	9.5	85	3	10.3	.47	.01
16...	0840	108	79	7.3	10.1	100	7	9.9	.12	.01
DEC										
07...	0920	8.	84	7.3	6.5	33	2	11.8	.27	.00
14...	0900	140	75	7.3	6.8	33	2	11.2	.45	.01
JAN										
04...	0935	228	81	7.2	3.7	27	1	12.5	.80	.01
18...	0900	254	74	7.1	8.9	38	3	10.6	.53	.01
FEB										
08...	1100	145	76	7.6	6.0	25	1	11.9	.43	.00
15...	1000	413	72	7.1	6.6	33	2	11.7	.94	.00
MAR										
08...	1030	4210	64	6.7	7.1	70	40	10.9	1.6	.01
22...	1020	551	61	7.0	8.2	25	2	11.8	.78	.00
APR										
05...	0900	416	70	7.1	9.4	17	2	10.6	.76	.00
19...	1010	228	70	6.6	8.6	25	1	11.5	.48	.01
MAY										
03...	0940	402	70	6.9	11.7	33	5	10.4	.32	.01
17...	1015	210	70	7.2	10.7	29	2	11.0	.41	.01
JUN										
07...	1015	354	63	7.2	14.5	25	4	10.3	.50	.00
21...	1015	135	70	7.0	14.7	25	4	9.8	.25	.01
JUL										
12...	1015	69	85	7.1	15.8	33	3	9.4	.22	.01
26...	1030	42	75	7.1	17.6	--	2	8.1	.26	.00
AUG										
09...	1030	32	85	7.1	20.5	33	4	8.8	.28	.01
23...	1005	31	89	6.9	17.9	42	2	8.9	.33	.01
SEP										
13...	1010	101	79	7.0	14.7	33	4	9.8	.31	.01
27...	1015	236	73	6.9	11.7	50	2	10.5	.53	.01

DATE	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT									
04...	.05	.22	.02	.00	0	2	7	.0	10
18...	.04	.20	.03	.00	0	0	12	.0	0
NOV									
02...	.11	.30	.03	.01	0	1	4	.0	0
16...	.11	.20	.04	.01	0	1	31	.0	10
DEC									
07...	.05	.19	.02	.00	0	6	8	.1	20
14...	.04	.22	.01	.00	0	0	5	.0	10
JAN									
04...	.04	.12	.01	.00	0	2	8	.0	0
18...	.12	.26	.04	.01	0	1	13	.0	0
FEB									
08...	.03	.15	.02	.00	0	1	8	.0	0
15...	.03	.23	.02	.01	0	1	14	.1	10
MAR									
08...	.11	.50	.16	.01	0	0	6	.2	0
22...	.04	.22	.02	.01	0	3	14	.0	10
APR									
05...	.04	.14	.02	.01	0	0	3	.0	30
19...	.09	.21	.02	.01	0	1	17	.0	10
MAY									
03...	.07	.26	.05	.01	0	0	20	.0	5
17...	.05	.16	.01	.00	0	1	5	.0	0
JUN									
07...	.08	.18	.02	.01	0	0	3	1.8	0
21...	.06	.18	.02	.00	0	1	6	.1	0
JUL									
12...	.14	.27	.03	.02	0	2	16	.0	20
26...	.11	.18	.03	.00	0	0	10	.0	2
AUG									
09...	.12	.22	.06	.00	0	0	11	.0	0
23...	.12	.22	.03	.01	0	2	13	.1	0
SEP									
13...	.07	.20	.02	.01	0	0	1	.0	0
27...	.05	.16	.03	.00	0	0	2	.0	0

12016900 NORTH RIVER AT AMERICAN MILL ROAD NEAR RAYMOND, WA

LOCATION.--Lat 46°49'46", long 123°49'48", in SW¼NW¼ sec.32, T.16 N., R.9 W., Grays Harbor County, Hydrologic Unit 17100106, at American Mill Road crossing, 3.8 mi (6.1 km) upstream from gaging station and 11.0 mi (17.7 km) northwest of Raymond at mi 10.7 (17.2 km).

DRAINAGE AREA.--210 mi² (544 km²).

PERIOD OF RECORD.--Water years 1973, 1976 to September 1977 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES.--July 1963 to September 1973 (see REMARKS).

REMARKS.--Prior to November 1975 published as 12017000 "North River near Raymond." Period of daily temperature records water years 1963-73, at site 3.8 mi (6.1 km) downstream.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)
OCT										
04...	1055	69	81	7.2	12.8	--	2	9.2	.02	.00
18...	1150	55	81	7.3	10.0	140	4	9.6	.01	.00
NOV										
01...	1145	586	81	7.1	10.1	140	7	9.8	.35	.01
15...	1310	187	80	7.3	8.8	175	45	10.3	.16	.01
DEC										
06...	1255	196	75	7.3	4.9	60	2	12.5	.27	.00
13...	1200	308	64	7.2	6.6	85	5	11.8	.51	.01
JAN										
03...	1135	586	69	7.0	4.2	47	3	12.2	.56	.01
17...	1230	861	67	6.9	6.8	65	6	11.5	.47	.01
FEB										
07...	1415	343	69	7.2	6.3	55	2	11.7	.34	.00
14...	1230	1010	63	6.8	7.7	55	6	11.4	.79	.00
MAR										
07...	1225	273	53	6.4	7.3	75	25	10.8	.61	.01
21...	1225	814	50	7.0	7.7	38	3	11.6	.60	.00
APR										
04...	1245	664	60	6.8	9.7	33	3	10.9	.42	.00
18...	1250	382	50	7.2	9.4	50	3	11.3	.28	.00
MAY										
02...	1145	285	60	6.7	13.7	55	2	9.6	.18	.00
16...	1340	495	62	6.9	11.0	65	3	10.4	.18	.01
JUN										
06...	1320	594	57	7.1	15.5	50	4	10.7	.35	.00
20...	1315	218	66	7.1	14.9	70	4	9.4	.13	.01
JUL										
11...	1200	125	66	7.3	15.8	85	3	9.0	.16	.01
25...	1400	84	72	7.0	18.4	85	6	8.3	.13	.00
AUG										
08...	1245	61	82	7.2	18.2	95	2	9.2	.06	.01
22...	1305	46	94	7.3	18.1	100	2	8.5	.07	.01
SEP										
12...	1245	201	72	6.8	14.8	80	3	9.5	.19	.01
26...	1300	586	65	6.0	12.8	75	6	9.9	.36	.01

DATE	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT									
04...	.08	.26	.03	.01	0	4	13	.0	10
18...	.06	.24	.03	.01	0	0	11	.0	0
NOV									
01...	.10	.45	.05	.01	0	2	11	.0	10
15...	.09	.27	.04	.00	0	2	39	.0	10
DEC									
06...	.04	.10	.02	.01	0	2	4	.1	10
13...	.05	.16	.02	.00	0	2	10	.0	10
JAN									
03...	.06	.14	.01	.00	0	3	16	.0	10
17...	.06	.18	.03	.00	0	1	22	.1	10
FEB									
07...	.03	.12	.02	.00	0	1	11	.0	0
14...	.04	.28	.03	.00	0	2	20	.1	10
MAR									
07...	.07	.42	.08	.00	0	0	8	8.0	0
21...	.05	.20	.02	.00	0	3	18	.0	10
APR									
04...	.04	.12	.02	.00	0	0	11	.0	0
18...	.09	.17	.02	.00	0	1	25	.0	0
MAY									
02...	.06	.16	.02	.01	0	0	40	.0	6
16...	.07	.16	.02	.00	<10	1	5	.0	0
JUN									
06...	.07	.20	.02	.00	0	0	4	2.6	0
20...	.07	.21	.03	.01	0	1	6	.1	2
JUL									
11...	.19	.56	.05	.00	0	1	13	.0	0
25...	.12	.19	.04	.00	0	0	11	.0	4
AUG									
08...	.13	.29	.05	.01	0	0	7	.0	10
22...	.11	.27	.04	.01	0	2	12	.0	0
SEP									
12...	.08	.20	.02	.00	0	0	3	.0	10
26...	.06	.24	.04	.00	0	0	18	.0	10

12017000 NORTH RIVER NEAR RAYMOND, WA

LOCATION.--Lat 46°48'27", long 123°50'58", in SE¼SW¼ sec.6, T.15 N., R.9 W., Grays Harbor County, Hydrologic Unit 17100106, on left bank 1.2 mi (1.8 km) upstream from lower Salmon Creek, 10 mi (16.1 km) northwest of Raymond, and at mile 6.9 (11.1 km).

DRAINAGE AREA.--219 m^2 (567 km^2).

PERIOD OF RECORD.--August 1927 to September 1977 (discontinued). Chemical analyses October 1972 to September 1973, water temperatures July 1963 to September 1973.

REVISED RECORDS.--WSP 792: 1934. WSP 832: 1935-36. WSP 1286: 1952.

GAGE.--Water-stage recorder. Datum of gage is 7.39 ft (2.252 m) above mean sea level (Western Washington Electric Light and Power Co. bench mark).

REMARKS.--Records good. Some diversion for farm and domestic use. No regulation.

AVERAGE DISCHARGE.--50 years, 966 ft^3/s (27.36 m^3/s), 59.90 in/yr (1,521 mm/yr), 699,900 acre-ft/yr (863 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft^3/s (991 m^3/s) Dec/ 10, 1933, gage height, 15.8 ft (4.82 m), from floodmarks, from rating curve extended above 9,400 ft^3/s (266 m^3/s); minimum, 21 ft^3/s (0.59 m^3/s) Aug. 24, 1951, gage height, 1.01 ft (0.308 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft^3/s (142 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 9	0400	*5,790	164	*7.23	2.204

Minimum discharge, 45 ft^3/s (1.27 m^3/s) Aug. 20, 21, gage height, 1.24 ft (0.378 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	550	236	652	562	1630	958	285	786	142	75	441
2	71	535	226	610	520	1550	849	282	814	142	70	352
3	71	335	217	592	445	1500	730	409	706	140	69	423
4	69	257	207	525	410	1290	676	574	730	142	67	604
5	74	213	201	470	386	1070	622	622	712	160	64	646
6	73	187	196	430	368	982	580	580	616	192	63	515
7	67	170	204	395	351	2590	540	500	535	176	63	396
8	64	159	278	373	335	5070	515	441	480	147	63	324
9	63	151	480	359	319	5400	525	405	436	131	61	278
10	64	144	495	347	465	4320	525	378	396	125	61	249
11	64	139	386	382	772	2900	480	352	364	125	58	227
12	66	131	339	465	1120	2340	450	332	336	125	57	206
13	73	127	311	495	1290	1870	441	324	316	127	53	192
14	69	134	293	505	1070	1580	445	316	299	125	51	178
15	64	193	315	556	863	1540	436	352	285	118	50	170
16	61	335	319	628	751	1360	432	391	275	114	49	165
17	58	574	331	821	670	1170	418	364	262	116	49	178
18	56	765	364	1180	604	1040	391	320	243	114	49	204
19	55	646	368	1260	545	950	373	299	224	114	48	282
20	53	480	343	1060	562	863	356	278	218	108	46	391
21	53	405	311	878	712	814	344	278	221	100	45	485
22	52	368	311	744	894	814	348	265	224	94	48	455
23	52	343	425	658	1020	842	332	255	218	98	63	378
24	64	323	550	586	878	902	309	246	204	89	114	391
25	151	364	574	535	863	942	299	240	187	85	418	525
26	271	355	1690	490	1060	966	340	272	178	82	758	562
27	260	319	2640	455	1120	1430	418	340	170	80	445	510
28	173	285	1860	425	1310	1870	378	634	160	80	309	427
29	141	267	1230	400	---	1620	324	842	155	80	309	475
30	131	250	910	377	---	1300	299	646	150	78	676	470
31	296	---	751	445	---	1080	---	622	---	78	800	---
TOTAL	2946	9504	17361	18098	20265	53595	14133	12444	10900	3627	5151	11099
MEAN	95.0	317	560	584	724	1729	471	401	363	117	166	370
MAX	296	765	2640	1260	1310	5400	958	842	814	192	800	646
MIN	52	127	196	347	319	814	299	240	150	78	45	165
CFSM	.43	1.45	2.56	2.67	3.31	7.90	2.15	1.83	1.66	.53	.76	1.69
IN.	.50	1.61	2.95	3.07	3.44	9.10	2.40	2.11	1.85	.62	.87	1.89
AC-FT	5840	18850	34440	35900	40200	106300	28030	24680	21620	7190	10220	22010

CAL YR 1976 TOTAL 274668 MEAN 750 MAX 9800 MIN 52 CFSM 3.43 IN 46.66 AC-FT 544800
WTR YR 1977 TOTAL 179123 MEAN 491 MAX 5400 MIN 45 CFSM 2.24 IN 30.43 AC-FT 355300

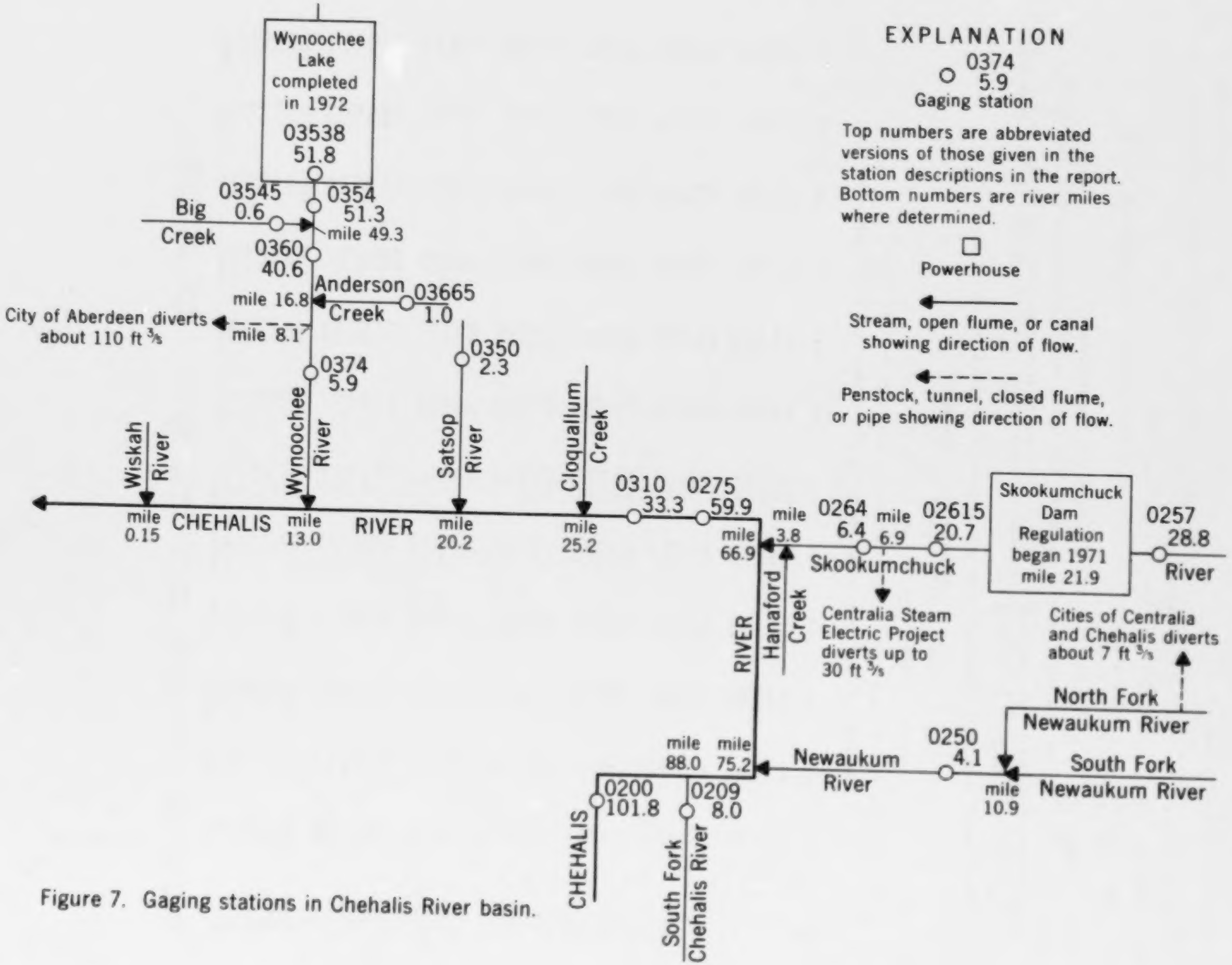

Wynoochee
Lake
completed
in 1972
03538
51.8
03545
0.6
Big
Creek
0354
51.3
mile 49.3
0360
40.6
Anderson
Creek
03665
1.0
mile 16.8
City of Aberdeen diverts
about 110 ft³/s
mile 8.1
0374
5.9
0350
2.3
Wiskah
River
Wynoochee
River
Satsop
River
Cloquallum
Creek
mile
0.15
CHEHALIS
mile
13.0
RIVER
mile
20.2
mile
25.2
0310
33.3
0275
59.9
mile
66.9
mile
3.8
0264
6.4
mile
6.9
02615
20.7
Skookumchuck
Skookumchuck
Dam
Regulation
began 1971
mile 21.9
0257
28.8
River
Hanaford
Creek
RIVER
Centralia Steam
Electric Project
diverts up to
30 ft³/s
Cities of Centralia
and Chehalis diverts
about 7 ft³/s
North Fork
Newaukum River
South Fork
Newaukum River
0250
4.1
mile
10.9
Newaukum
River
mile
88.0
mile
75.2
0200
101.8
0209
8.0
CHEHALIS
South Fork
Chehalis River
EXPLANATION
0374
5.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
□
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 7. Gaging stations in Chehalis River basin.

12020000 CHEHALIS RIVER NEAR DOTY, WA

LOCATION.--Lat 46°37'03", long 123°16'35", in NE¼NW¼ sec.14, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, on right bank 1.3 mi (2.1 km) south of Doty, 1.6 mi (2.6 km) upstream from Elk Creek, 3.4 mi (5.5 km) north of Pe Ell, and at mile 101.8 (163.8 km).

DRAINAGE AREA.--113 mi² (293 km²).

PERIOD OF RECORD.--October 1939 to current year. Chemical analyses July 1959 to September 1970, sediment records October 1961 to December 1964 (partial-record station).

REVISED RECORDS.--WSP 1316: 1943(M). WSP 1446: 1946(M). WRD Wash. 1972: 1945(M).

GAGE.--Water-stage recorder. Datum of gage is 302.1 ft (92.08 m) above mean sea level (river-profile survey). Prior to Oct. 1, 1961, nonrecording gage and crest-stage gage at site 100 ft (30 m) downstream at same datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--38 years, 580 ft³/s (16.43 m³/s), 69.70 in/yr (1,770 mm/yr), 420,200 acre-ft/yr (518 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s (646 m³/s) Jan. 20, 1972, gage height, 18.36 ft (5.596 m) from rating curve extended above 7,400 ft³/s (210 m³/s) on basis of slope-area measurement of peak flow; minimum, 18 ft³/s (0.51 m³/s) Oct. 14, 1952, Aug. 25-28, 1958, Sept. 4, 5, 1972; minimum gage height, 0.69 ft (0.210 m) Aug. 18, 19, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,800 ft³/s (193 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 8	2300	*5,590	158	*8.62	2.627

Minimum discharge, 26 ft³/s (0.74 m³/s), Aug. 18, 19, gage height, 0.69 ft (0.210 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	486	90	232	154	1440	607	151	689	76	40	179
2	34	265	85	221	130	1130	517	157	549	76	40	143
3	38	194	80	196	121	1070	448	306	446	85	39	179
4	42	157	77	177	116	847	398	394	486	97	37	433
5	39	134	75	161	112	669	366	441	422	95	37	356
6	37	123	75	150	108	613	338	356	362	100	36	243
7	35	110	80	140	105	2360	314	297	310	85	36	190
8	34	103	240	135	101	3900	294	264	272	78	35	158
9	34	100	341	125	100	3950	306	236	248	78	35	136
10	35	95	239	120	219	2070	283	215	220	78	33	121
11	37	90	198	144	373	1390	265	205	205	74	32	110
12	36	90	172	164	410	1170	248	191	193	76	30	102
13	36	85	153	181	486	947	262	177	181	78	29	95
14	35	85	142	177	374	810	251	185	175	74	29	88
15	33	90	135	194	306	722	237	196	166	70	30	84
16	33	130	130	235	266	639	248	196	160	66	29	89
17	32	170	125	226	241	565	230	185	154	68	28	83
18	31	227	135	256	212	538	223	179	148	68	27	91
19	31	190	130	276	196	515	211	170	136	62	28	215
20	30	160	128	247	229	471	202	161	130	58	29	353
21	30	142	125	218	352	478	199	163	125	57	29	321
22	30	128	125	198	805	498	199	154	118	53	30	258
23	30	118	200	181	649	503	184	143	110	51	43	258
24	35	110	190	167	491	534	175	144	102	48	120	295
25	250	130	180	156	456	515	175	137	97	46	217	341
26	198	115	500	146	471	508	187	191	92	48	148	320
27	128	105	970	137	613	1040	172	222	90	46	100	271
28	103	100	600	129	1390	1060	163	580	87	46	102	269
29	90	98	414	125	---	893	160	522	82	45	199	247
30	77	95	329	120	---	734	157	390	80	43	525	218
31	345	---	269	124	---	632	---	423	---	42	264	---
TOTAL	2020	4225	6732	5458	9586	33211	8019	7731	6635	2067	2436	6254
MEAN	65.2	141	217	176	342	1071	267	249	221	66.7	78.6	208
MAX	345	486	970	276	1390	3950	607	580	689	100	525	433
MIN	30	85	75	120	100	471	157	137	80	42	27	83
CFSM	.58	1.25	1.92	1.56	3.03	9.48	2.36	2.20	1.96	.59	.70	1.84
IN.	.66	1.39	2.22	1.80	3.16	10.93	2.64	2.55	2.18	.68	.80	2.06
AC-FT	4010	8380	13350	10830	19010	65870	15910	15330	13160	4100	4830	12400

CAL YR 1976 TOTAL 152396 MEAN 416 MAX 5730 MIN 30 CFSM 3.68 IN 50.17 AC-FT 302300
WTR YR 1977 TOTAL 94374 MEAN 259 MAX 3950 MIN 27 CFSM 2.29 IN 31.07 AC-FT 187200

12020900 SOUTH FORK CHEHALIS RIVER NEAR BOISTFORT, WA

LOCATION.--Lat 46°31'38", long 123°06'58", in SE¼NE¼ sec.13, T.12 N., R.4 W., Lewis County, Hydrologic Unit 17100103, on left bank 1.0 mi (1.6 km) downstream from Neiman Creek, 1.0 mi (1.6 km) southeast of Boistfort, and 2.7 mi (4.3 km) upstream from Stillman Creek.

DRAINAGE AREA.--44.9 mi² (116.3 km²).

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 280 ft (85 m), from topographic map.

REMARKS.--Records excellent. Many small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--12 years, 182 ft³/s (5.154 m³/s), 55.05 in/yr (1,398 mm/yr), 131,900 acre-ft/yr (163 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 6,200 ft³/s (176 m³/s) Dec. 4, 1975, gage height, 14.73 ft (4.490 m), from rating curve extended above 3,000 ft³/s (85.0 m³/s) on basis of slope-area measurement at gage height 13.86 ft (4.225 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 1-2, 1967, gage height, 2.36 ft (0.719 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 1,900 ft³/s (53.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0700	*1,240	35.1	*7.79	2.374

Minimum discharge, 0.31 ft³/s (0.009 m³/s) Aug. 19, gage height, 2.42 ft (0.738 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	125	20	59	40	475	145	45	199	13	3.6	29
2	8.6	55	19	57	37	350	131	44	140	12	2.8	21
3	11	38	19	54	34	340	118	60	105	13	2.3	22
4	13	31	19	48	33	270	109	87	125	16	2.3	54
5	11	26	19	44	32	223	102	95	123	17	3.0	58
6	9.8	23	18	39	32	193	95	81	98	18	3.0	36
7	9.4	22	18	36	38	407	89	70	83	17	3.6	26
8	9.4	21	29	34	30	804	84	65	73	15	3.2	22
9	9.0	20	68	33	29	1090	83	59	65	15	3.0	19
10	9.4	19	48	32	42	685	78	54	58	14	2.3	17
11	9.8	19	40	39	65	475	73	52	54	13	2.0	15
12	9.4	18	35	42	74	385	69	49	51	13	2.3	14
13	9.0	18	32	44	95	318	69	46	48	15	1.9	13
14	8.6	18	30	46	77	270	66	44	46	15	2.0	12
15	8.6	19	29	46	66	272	64	47	43	13	1.6	11
16	8.6	26	31	58	62	241	69	51	40	12	1.3	12
17	9.0	33	29	56	60	213	65	48	37	11	1.4	13
18	8.2	58	32	56	54	191	62	44	33	12	.52	15
19	8.2	41	30	60	51	175	59	42	33	12	.37	29
20	8.2	34	29	56	51	159	57	40	30	10	.70	54
21	8.2	30	28	52	86	147	57	38	31	9.0	2.2	76
22	8.2	28	28	49	221	142	62	37	30	8.6	3.8	51
23	8.2	25	40	46	201	144	56	37	27	7.4	5.6	44
24	9.4	24	43	43	149	149	53	36	24	6.5	28	64
25	39	28	39	42	129	140	51	35	22	5.9	27	111
26	41	26	122	40	187	131	59	43	21	4.5	25	118
27	27	23	245	38	171	199	52	45	19	4.5	18	77
28	19	22	142	37	410	229	49	70	19	5.0	15	60
29	17	21	104	36	---	205	46	83	16	4.5	30	51
30	15	20	83	35	---	179	48	63	15	4.8	104	45
31	43	---	69	35	---	159	---	80	---	4.5	50	---
TOTAL	421.8	911	1537	1392	2540	9360	2220	1690	1708	341.2	351.79	1189
MEAN	13.6	30.4	49.6	44.9	91.0	302	74.0	54.5	56.9	11.0	11.3	39.6
MAX	43	125	245	60	410	1090	145	95	199	18	104	118
MIN	8.2	18	18	32	29	131	46	35	15	4.5	.37	11
CFSM	.30	.68	1.11	1.00	2.03	6.73	1.65	1.21	1.27	.25	.25	.88
IN.	.35	.75	1.27	1.15	2.11	7.75	1.84	1.40	1.42	.28	.29	.99
AC-FT	837	1810	3050	2760	5050	18570	4400	3350	3390	677	698	2360

CAL YR 1976 TOTAL 53737.00 MEAN 147 MAX 2080 MIN 6.3 CFSM 3.27 IN 44.52 AC-FT 106600
WTR YR 1977 TOTAL 23669.79 MEAN 64.8 MAX 1090 MIN .37 CFSM 1.44 IN 19.61 AC-FT 46950

12022250 CHEHALIS RIVER AT ADNA, WA

LOCATION.--Lat 46°37'42", long 123°03'35", in SW¼NE¼ sec.9, T.13 N., R.3 W., Lewis County, Hydrologic Unit 17100103, at bridge on U.S. Highway 6 at Adna, at mi 81.1 (130.5 km).

DRAINAGE AREA.--380 mi² (984 km²).

PERIOD OF RECORD.--Water years 1972, 1975, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
06...	1210	104	95	7.2	13.5	--	7	10.0	.01	.04	.02	.01
20...	1055	88	100	7.5	8.3	46	4	10.5	.00	.03	.02	.01
NOV												
04...	1245	345	80	7.4	9.3	85	3	10.8	.34	.05	.02	.01
18...	1035	670	84	7.5	8.7	90	6	10.2	.04	.04	.04	.01
DEC												
09...	1015	770	84	7.5	6.0	190	15	11.8	.13	.08	.05	.00
16...	1405	300	78	7.5	7.9	30	10	12.1	.19	.03	.01	.00
JAN												
06...	1040	365	91	7.5	.6	34	2	13.9	.45	.05	.01	.00
20...	1320	590	80	7.2	6.5	50	4	11.8	.39	.07	.02	.00
FEB												
10...	1055	270	87	7.7	7.7	30	3	11.6	.14	.06	.01	.00
17...	1220	550	73	7.5	7.9	42	4	11.8	.42	.09	.02	.01
MAR												
10...	1125	6500	68	6.9	6.0	80	25	11.8	1.0	.12	.11	.01
24...	1120	1190	71	7.4	8.2	46	1	11.4	.44	.12	.04	.01
APR												
07...	1020	750	77	7.2	11.6	25	3	10.2	.37	.04	.02	.01
21...	1235	450	80	7.2	10.4	33	2	11.1	.21	.04	.02	.00
MAY												
05...	0900	950	73	7.4	9.6	46	5	10.7	.21	.07	.04	.01
19...	1250	410	80	7.1	14.1	42	2	11.2	.09	.09	.02	.00
JUN												
09...	0940	520	75	7.0	14.9	29	2	9.6	.16	.08	.02	.00
23...	1030	244	83	7.2	17.1	33	1	9.0	.06	.06	.02	.00
JUL												
14...	0950	142	91	7.4	16.1	33	2	9.1	.03	.10	.02	.00
28...	1115	210	100	7.2	19.7	29	2	8.0	.05	.09	.02	.00
AUG												
11...	0955	58	104	7.3	23.5	25	1	7.2	.04	.07	.02	.00
25...	1030	308	96	6.9	16.2	75	4	8.6	.08	.09	.04	.00
SEP												
15...	1130	147	82	7.2	16.3	65	2	9.4	.19	.08	.02	.01
29...	0950	520	80	7.0	12.3	50	3	10.0	.27	.07	.02	.00

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

LOCATION.--Lat 46°37'13", long 122°56'38", in SW¼SW¼ sec.9, T.13 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on left bank at highway bridge 3.0 mi (4.8 km) southeast of Chehalis, and at mile 4.1 (6.6 km).

DRAINAGE AREA.--155 mi² (401 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-March 1929 to September 1931, July 1942 to current year.

REVISED RECORDS.--WSP 1012: 1943. WSP 1316: 1929-30(M), 1950(M). WSP 1716: Drainage area. WSP 1932: 1931(M), 1945-49, 1954(M), 1956(P), 1958(M), 1959-60.

GAGE.--Water-stage recorder. Altitude of gage is 190 ft (58 m), from topographic map. Prior to Oct. 1, 1929, nonrecording gage at same site at datum 1.0 ft (0.30 m) higher. Oct. 1, 1929, to July 5, 1962, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Water-discharge records good. Cities of Chehalis and Centralia divert about 7 ft³/s (0.20 m³/s) from North Fork Newaukum River for municipal use. No regulation.

AVERAGE DISCHARGE.--37 years (water years, 1930-31, 1943-77), 508 ft³/s (14.39 m³/s), 368,000 acre-ft/yr (454 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,770 ft³/s (277 m³/s) Jan. 21, 1972, gage height, 12.12 ft (3.694 m); maximum gage height, 13.62 ft (4.151 m) Dec. 9, 1953; minimum discharge, 12 ft³/s (0.34 m³/s) Sept. 13, 14, 1949, Aug. 29, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0500	*2,570	72.8	*5.61	1.710

Minimum discharge, 27 ft³/s (0.765 m³/s) Aug. 13, 18, gage height, 1.09 ft (0.332 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	322	78	227	203	1190	495	172	1660	95	45	125
2	54	204	76	209	175	890	435	203	1020	95	43	97
3	70	154	74	197	157	1290	386	403	728	100	42	97
4	61	128	72	177	148	1000	354	408	800	120	40	165
5	55	113	72	162	142	722	336	545	615	117	40	230
6	54	103	72	140	137	580	336	444	490	107	40	150
7	50	95	87	130	132	692	336	362	399	95	38	115
8	50	90	117	120	130	1350	354	453	343	87	38	97
9	48	87	217	110	127	2380	346	354	304	85	36	85
10	52	82	155	120	142	1610	308	297	266	83	35	77
11	78	80	134	142	239	1050	287	276	239	83	31	73
12	63	77	121	180	276	992	270	242	224	90	31	67
13	57	75	112	224	290	926	340	221	212	92	30	65
14	54	75	105	245	255	770	301	218	200	83	30	63
15	52	80	102	224	227	635	326	252	188	79	33	63
16	51	103	100	301	206	555	340	304	180	77	31	63
17	50	129	96	308	194	535	320	758	170	77	28	63
18	49	197	123	297	177	466	304	540	157	81	28	67
19	48	145	114	301	165	430	276	417	155	71	28	115
20	47	125	104	262	165	421	255	336	150	67	30	224
21	47	114	101	236	224	420	242	301	148	63	31	252
22	47	109	100	212	466	500	252	266	145	61	33	182
23	47	100	260	194	480	560	233	239	135	57	51	197
24	50	95	251	180	354	625	224	269	127	55	200	336
25	189	96	205	170	315	605	221	262	120	53	120	343
26	244	95	598	160	444	565	245	280	115	53	100	329
27	137	87	830	152	394	950	215	280	110	55	97	227
28	107	84	545	148	974	872	197	358	107	53	77	191
29	104	82	399	142	---	728	185	435	105	55	122	224
30	91	79	318	137	---	595	175	362	100	53	386	194
31	98	---	262	140	---	525	---	716	---	49	191	---
TOTAL	2256	3405	6000	5947	7338	25429	8894	10973	9712	2391	2105	4576
MEAN	72.8	114	194	192	262	820	296	354	324	77.1	67.9	153
MAX	244	322	830	308	974	2380	495	758	1660	120	386	343
MIN	47	75	72	110	127	420	175	172	100	49	28	63
CFSM	.47	.74	1.25	1.24	1.69	5.29	1.91	2.28	2.09	.50	.44	.99
IN.	.54	.82	1.44	1.43	1.76	6.10	2.13	2.63	2.33	.57	.51	1.10
AC-FT	4470	6750	11900	11800	14550	50440	17640	21760	19260	4740	4180	9080

CAL YR 1976 TOTAL 155587 MEAN 425 MAX 6400 MIN 47 CFSM 2.74 IN 37.34 AC-FT 308600
WTR YR 1977 TOTAL 89026 MEAN 244 MAX 2380 MIN 28 CFSM 1.57 IN 21.37 AC-FT 176600

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-70, 1974, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
06...	1155	54	100	7.3	13.3	--	5	10.4	.08	.04	.03	.00
20...	1025	47	111	7.5	7.3	33	3	11.2	.08	.03	.02	.01
NOV												
04...	1225	128	86	7.5	9.1	65	3	11.8	.20	.05	.03	.01
19...	1010	286	91	7.6	7.7	75	7	10.9	.13	.10	.05	.01
DEC												
09...	0950	230	94	7.6	5.3	110	6	12.2	.22	.07	.04	.00
16...	1345	99	92	7.9	7.4	33	3	13.3	.21	.04	.02	.01
JAN												
06...	1015	140	95	7.4	.4	34	3	14.3	.56	.05	.02	.01
20...	1300	262	76	7.2	6.0	60	3	12.4	.56	.00	.04	.01
FEB												
10...	1030	135	87	7.8	7.0	33	3	11.9	.20	.06	.02	.00
17...	1200	194	80	7.8	8.0	42	4	12.5	.41	.09	.02	.01
MAR												
10...	1100	1680	60	6.9	5.7	85	20	12.0	1.2	.12	.08	.01
24...	1100	620	62	7.4	7.9	60	7	11.8	.51	.13	.05	.01
APR												
07...	0955	336	67	7.3	10.7	25	3	10.8	.33	.04	.02	.01
21...	1220	242	70	7.3	11.1	38	3	11.7	.26	.04	.02	.00
MAY												
05...	0840	585	65	7.3	8.4	65	15	10.9	.33	.11	.06	.01
19...	1225	412	65	7.0	12.6	50	5	11.8	.40	.08	.03	.00
JUN												
09...	0915	388	68	7.7	13.4	33	3	10.6	.25	.07	.02	.01
23...	1010	135	82	7.5	16.4	60	2	10.7	.01	.04	.02	.00
JUL												
14...	0925	85	95	7.5	15.3	29	3	9.6	.01	.10	.02	.00
28...	1040	55	100	7.4	18.9	17	2	8.4	.03	.12	.03	.00
AUG												
11...	0925	31	113	7.2	21.0	29	1	7.3	.04	.09	.03	.01
25...	0955	120	100	6.9	15.2	85	8	8.8	.48	.12	.05	.01
SEP												
15...	1110	63	100	7.5	15.9	45	3	10.3	.04	.10	.02	.01
29...	0925	227	82	7.0	12.4	60	5	9.9	.29	.08	.03	.01

12025700 SKOOKUMCHUCK RIVER NEAR VAIL, WA

LOCATION.--Lat 46°46'22", long 122°35'34", in SW¼NW¼ sec.20, T.15 N., R.2 E., Thurston County, Hydrologic Unit 17100103, on right bank about 150 ft (46 m) downstream from logging bridge, 0.4 mi (0.6 km) downstream from Hospital Creek, 5.8 mi (9.3 km) southeast of Vail, and at mile 28.8 (46.3 km).

DRAINAGE AREA.--40.0 mi^2 (103.6 km^2).

PERIOD OF RECORD.--October 1967 to current year.

REVISED RECORDS.--WDR WA-75-1: 1974.
GAGE.--Water-stage recorder. Altitude of gage is 710 ft (216 m), from topographic map.

REMARKS. Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--10 years, 212 ft^3/s (6.004 m^3/s), 71.97 in/yr (1,828 mm/yr), 153,600 acre-ft/yr (189 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft^3/s (195 m^3/s) Jan. 20, 1972, gage height, 10.93 ft (3.331 m); minimum, 18 ft^3/s (0.51 m^3/s) part or all of each day Aug. 22-24, 26-31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,250 ft^3/s (35.4 m^3/s) and maximum (*).

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 9	0100	*1,260	35.7	*6.55	1.996

Minimum discharge, 24 ft^3/s (0.68 m^3/s) Oct. 23, 24, Aug. 16, 17, 18, 19, 20, 21; minimum gage height, 3.21 ft (0.978 m) Aug. 17, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	120	36	87	63	335	250	84	522	49	30	56
2	32	86	36	83	54	279	230	100	395	50	29	48
3	32	70	36	74	50	325	210	175	311	52	29	54
4	29	60	35	69	48	276	200	185	311	52	29	150
5	28	53	34	64	47	220	200	190	248	50	29	106
6	28	48	34	60	46	196	210	160	205	47	28	77
7	27	45	41	58	45	381	230	138	175	45	28	63
8	26	43	79	54	44	805	234	128	150	44	27	54
9	26	40	80	52	44	972	199	115	134	43	27	48
10	35	38	65	50	66	595	162	109	120	42	26	44
11	31	37	59	59	93	430	140	100	111	42	26	41
12	29	36	54	73	91	398	126	93	104	43	26	39
13	28	35	50	76	96	339	150	88	97	41	26	38
14	27	36	47	69	87	300	134	94	91	40	26	36
15	26	43	47	77	79	265	130	109	87	39	26	36
16	26	54	45	86	74	237	147	134	84	38	25	36
17	26	72	54	87	69	202	134	172	80	41	25	35
18	26	76	61	93	64	185	124	150	77	38	24	36
19	25	61	54	91	60	177	115	132	74	36	25	65
20	25	55	50	86	76	160	107	118	73	36	25	104
21	25	53	48	79	94	165	104	115	70	35	25	122
22	25	48	53	73	205	180	102	104	68	35	26	91
23	25	45	86	69	162	258	104	99	65	34	43	109
24	31	43	65	65	124	269	111	102	61	33	65	132
25	140	49	73	61	128	251	118	97	60	32	49	145
26	84	43	258	59	128	275	118	155	58	32	42	126
27	58	41	311	56	140	410	99	155	55	32	35	104
28	49	39	190	54	314	300	91	237	54	32	45	99
29	44	38	140	52	---	265	88	255	53	32	87	113
30	40	37	113	50	---	245	84	208	52	31	172	93
31	99	---	97	60	---	235	---	308	---	31	77	---
TOTAL	1180	1544	2431	2126	2591	9930	4451	4409	4045	1227	1202	2300
MEAN	38.1	51.5	78.4	68.6	92.5	320	148	142	135	39.6	38.8	76.7
MAX	140	120	311	93	314	972	250	308	522	52	172	150
MIN	25	35	34	50	44	160	84	84	52	31	24	35
CFSM	.95	1.29	1.96	1.72	2.31	8.00	3.70	3.55	3.38	.99	.97	1.92
IN.	1.10	1.44	2.26	1.98	2.41	9.23	4.14	4.10	3.76	1.14	1.12	2.14
AC-FT	2340	3060	4820	4220	5140	19700	8830	8750	8020	2430	2380	4560

CAL YR 1976 TOTAL 60783 MEAN 166 MAX 2410 MIN 25 CFSM 4.15 IN 56.53 AC-FT 120600
WTR YR 1977 TOTAL 37436 MEAN 103 MAX 972 MIN 24 CFSM 2.58 IN 34.81 AC-FT 74250

12026150 SKOOKUMCHUCK RIVER BELOW BLOODY RUN CREEK NEAR CENTRALIA, WA

LOCATION.--Lat 46°47'25", long 122°44'03", in NW¼NW¼ sec.18, T.15 N., R.1 E., Thurston County, Hydrologic Unit 17100103, on right bank, 0.7 mi (1.1 km) downstream from Bloody Run Creek, 1.2 mi (1.9 km) downstream from Skookumchuck Dam, 12 mi (19 km) northeast of Centralia, and at mile 20.7 (33.3 km).

DRAINAGE AREA.--65.9 mi²(170.7 km²). Area at site used prior to August 1969, 61.7 mi² (159.8 km²).

PERIOD OF RECORD.--April 1929 to November 1933, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316 and 1736. Published as "near Centralia" (12026000) 1929 to July 1969.

GAGE.--Water-stage recorder. Datum of gage is 317.34 ft (96.725 m) above mean sea level. Apr. 1, 1929, to Sept. 30, 1931, and Feb. 1, 1932, to Dec. 6, 1933, nonrecording gage at site 1.1 mi (1.8 km) upstream at different datum. Oct. 1939 to July 1969 at site 1.3 mi (2.1 km) upstream at datum 301.04 ft (91.757 m) above mean sea level.

REMARKS.--Records good except those for period of shifting control, Apr. 9 to Sept. 30, which are fair. Flow regulated by Skookumchuck Dam since January 1971. No diversions above station.

AVERAGE DISCHARGE.--42 years (water years 1930-33, 1940-77), 253 ft³/s (7.165 m³/s), 52.14 in/yr (1,324 mm/yr), 183,300 acre-ft/yr (226 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft³/s (190 m³/s), Dec. 9, 1953, gage height, 46.59 ft (14.810 m), site and datum then in use; minimum 12 ft³/s (0.34 m³/s) May 28, 1970, caused by pumping during dam construction.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 2	0500	*550	15.6	*6.70	2.042

Minimum discharge, 52 ft³/s (1.47 m³/s) Feb. 10, 17, 18, 19, 20, gage height, 4.98 ft (1.518 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	127	125	102	87	70	111	100	370	89	87	95
2	130	125	122	102	87	64	112	108	522	89	87	111
3	130	122	104	97	87	67	124	254	433	89	87	120
4	132	122	91	93	87	64	139	272	394	89	87	122
5	132	122	91	93	87	61	141	272	332	89	87	122
6	132	122	91	93	77	59	178	245	281	89	87	117
7	132	122	91	93	68	64	207	207	248	89	87	120
8	130	122	93	93	57	85	227	195	242	89	87	117
9	132	122	93	93	55	115	221	180	242	89	87	117
10	132	122	91	93	54	89	197	172	242	89	87	117
11	130	122	91	93	55	73	178	172	239	89	87	117
12	130	122	89	93	54	72	162	170	239	89	87	117
13	127	120	89	95	54	73	172	167	195	89	87	117
14	125	120	89	95	53	77	172	167	147	89	87	120
15	125	120	89	95	53	92	167	167	147	89	83	117
16	125	120	89	95	53	89	180	172	117	89	81	117
17	125	122	89	95	53	87	175	182	97	89	79	111
18	125	122	89	97	52	87	165	242	97	91	81	111
19	125	125	89	97	52	85	155	278	95	89	81	115
20	125	127	89	97	53	85	142	266	95	87	81	120
21	125	127	89	93	56	85	135	260	95	87	81	122
22	125	127	89	89	63	85	132	251	95	87	81	120
23	125	127	95	89	59	88	127	218	95	87	85	122
24	125	125	93	87	56	102	130	185	95	87	85	125
25	127	125	93	87	56	115	135	180	95	87	85	132
26	127	125	108	87	58	115	147	182	95	87	85	125
27	125	125	108	87	57	120	132	182	89	87	85	122
28	125	125	104	87	68	119	117	185	87	87	87	122
29	125	122	102	87	---	116	111	187	89	87	91	125
30	125	122	102	87	---	113	106	187	89	87	97	122
31	127	---	102	87	---	111	---	218	---	87	89	---
TOTAL	3955	3698	2969	2871	1751	2727	4597	6223	5698	2737	2655	3557
MEAN	128	123	95.8	92.6	62.5	88.0	153	201	190	88.3	85.6	119
MAX	132	127	125	102	87	120	227	278	522	91	97	132
MIN	125	120	89	87	52	59	106	100	87	87	79	95
AC-FT	7840	7330	5890	5690	3470	5410	9120	12340	11300	5430	5270	7060

CAL YR 1976 TOTAL 90139 MEAN 246 MAX 3400 MIN 89 AC-FT 178800
WTR YR 1977 TOTAL 43430 MEAN 119 MAX 522 MIN 52 AC-FT 86160

12026400 SKOOKUMCHUCK RIVER NEAR BUCODA, WA

LOCATION.--Lat 46°46'20", long 122°55'23", in SW¼NW¼ sec.22, T.15 N., R.2 W., Thurston County, Hydrologic Unit 17100103, on left bank 100 ft (30 m) downstream from bridge on State Highway 507, 3.3 mi (5.3 km) southwest of Bucoda, and at mile 6.4 (10.3 km).

DRAINAGE AREA.--112 mi² (290 km²).

PERIOD OF RECORD.--December 1967 to current year, water temperatures October 1968 to September 1971, sediment records July 1968 to September 1971.

GAGE.--Water-stage recorder. Datum of gage is 194.60 ft (59.314 m) above mean sea level.

REMARKS.--Records excellent. Flow regulated by Skookumchuck River Dam since January 1971. Up to 30 ft³/s (0.85 m³/s) diverted at point 0.5 mi (0.8 km) upstream for consumptive use at Centralia Steam Electric Project. Other minor diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--9 years, 380 ft³/s (10.76 m³/s), 275,300 acre-ft/yr (339 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,190 ft³/s (232 m³/s) Jan. 21, 1972, gage height, 16.82 ft (5.127 m); minimum, 21 ft³/s (0.59 m³/s) Aug. 15, 16, 18, 19, 20, 1970, gage height, 3.85 ft (1.173 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 2,750 ft³/s (77.9 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 8	2100	*764	21.6	*6.51	1.984

Minimum discharge, 53 ft³/s (1.50 m³/s) Feb. 9, 10, Aug. 17, 18, gage height, 4.18 ft (1.274 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	139	117	106	89	325	181	118	697	96	82	92
2	119	127	116	120	89	237	176	117	723	96	81	114
3	119	120	110	110	87	231	173	223	582	97	80	132
4	119	121	86	95	85	213	179	344	520	103	79	138
5	124	125	83	92	82	173	184	339	461	110	79	138
6	124	120	84	85	82	144	216	336	392	94	70	137
7	122	112	86	91	70	163	255	292	331	93	79	127
8	128	112	90	85	66	343	283	298	305	93	82	121
9	130	124	98	85	58	668	290	251	301	93	82	133
10	129	114	93	90	56	570	255	226	296	92	79	143
11	128	112	86	86	65	363	219	223	203	92	71	136
12	124	118	88	87	68	279	192	225	309	95	70	125
13	123	119	91	94	65	276	190	209	280	94	76	127
14	120	115	90	102	64	246	192	199	176	93	81	122
15	127	108	88	97	61	246	182	200	171	91	80	120
16	133	109	81	97	60	213	212	208	166	90	72	131
17	121	118	85	97	59	187	214	320	120	95	65	127
18	118	140	91	99	59	173	195	311	112	96	68	117
19	117	127	90	108	59	166	179	362	113	91	68	126
20	114	123	89	110	63	156	168	332	115	83	67	146
21	110	129	88	106	91	146	158	319	116	84	66	154
22	108	135	88	97	137	144	152	305	116	101	76	162
23	111	134	115	96	144	166	138	282	114	100	90	163
24	116	131	112	93	114	166	137	220	115	77	100	177
25	127	110	109	91	98	198	142	214	124	82	96	190
26	128	120	194	90	122	192	150	217	123	86	92	183
27	121	119	214	89	112	258	149	216	116	86	83	192
28	118	121	161	88	195	258	129	229	102	86	81	144
29	120	119	136	87	---	237	113	244	100	84	86	150
30	126	118	121	87	---	213	114	230	95	82	141	147
31	129	---	111	88	---	192	---	338	---	81	103	---
TOTAL	3778	3647	3251	2946	2400	7522	5525	7956	7592	2836	2532	4136
MEAN	122	122	105	95.0	85.7	243	184	257	253	91.5	81.7	138
MAX	133	140	214	120	195	668	290	362	723	110	141	190
MIN	108	108	81	85	56	144	113	117	95	77	65	92
AC-FT	7490	7230	6450	5840	4760	14920	10960	15780	15060	5630	5020	8200

CAL YR 1976 TOTAL 117260 MEAN 320 MAX 4380 MIN 81 AC-FT 232600
WTR YR 1977 TOTAL 54119 MEAN 148 MAX 723 MIN 56 AC-FT 107300

12026700 CHEHALIS RIVER AT GALVIN, WA

LOCATION.--Lat 46°44'08", long 123°01'07", in NW¼NE¼ sec.2, T.14 N., R.3 W., Lewis County, Hydrologic Unit 17100103, at county road bridge, 0.5 mi (0.8 km) south of Galvin, 4.3 mi (6.9 km) upstream from Grand Mound gaging station and at mile 64.2 (103.3 km).

PERIOD OF RECORD.--Water years 1975, October 1976 to September 1977 (discontinued).

DRAINAGE AREA.--842 mi² (2,181 km²).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
06...	1320	292	95	7.2	15.1	--	7	8.6	.17	.11	.12	.05
20...	1125	264	100	7.2	10.5	32	3	8.5	.12	.14	.12	.07
NOV												
04...	1315	670	88	7.3	9.0	88	5	9.8	.44	.07	.06	.02
19...	1110	1080	100	7.3	9.0	55	5	9.5	.12	.12	.11	.05
DEC												
09...	1050	1140	111	7.4	5.3	58	4	11.0	.36	.16	.09	.04
16...	1435	958	85	7.4	6.5	62	6	11.6	.24	.11	.08	.05
JAN												
06...	1115	682	120	7.3	1.8	67	3	12.0	.40	.14	.06	.02
20...	1350	1160	95	7.2	6.0	60	5	11.3	.48	.12	.06	.02
FEB												
10...	1115	602	96	7.5	6.0	38	2	11.6	.28	.13	.08	.04
17...	1305	956	87	7.4	8.1	42	4	11.7	.47	.12	.08	.03
MAR												
10...	1200	13800	74	6.8	6.5	110	30	10.0	1.2	.17	.12	.01
24...	1155	2100	70	7.3	8.8	52	6	10.0	.98	.17	.06	.02
APR												
07...	1050	1500	80	7.2	12.0	32	4	10.1	.42	.07	.05	.02
21...	1335	969	75	7.0	10.6	38	4	10.8	.28	.09	.05	.03
MAY												
05...	0925	1040	80	7.3	11.6	60	6	10.0	.25	.11	.06	.02
19...	1305	1310	83	7.0	13.0	75	7	10.5	.41	.17	.07	.01
JUN												
09...	1020	1270	72	7.5	16.1	38	3	9.2	.23	.12	.05	.01
23...	1055	575	93	7.1	17.2	33	2	8.5	.12	.13	.07	.04
JUL												
14...	1020	367	99	7.1	17.2	38	3	7.7	.03	.23	.12	.08
28...	1150	298	95	7.3	20.6	33	3	8.1	.13	.12	.13	.05
AUG												
11...	1030	165	119	7.3	22.7	30	2	7.7	.18	.12	.11	.07
25...	1100	646	159	6.8	17.8	68	5	6.0	.16	.38	.27	.12
SEP												
15...	1200	384	105	7.3	16.5	68	3	8.2	.12	.21	.09	.07
29...	1015	1070	68	6.9	12.7	68	5	9.4	.35	.08	.06	.01

12027500 CHEHALIS RIVER NEAR GRAND MOUND, WA

LOCATION.--Lat 46°46'34", long 123°02'04", in NE¼NE¼ sec.22, T.15 N., R.3 W., Thurston County, Hydrologic Unit 17100103, on left bank at downstream side of highway bridge at Meadows, 1.5 mi (2.4 km) southwest of Grand Mound, 7.0 mi (11.3 km) downstream from Skookumchuck River, and at mile 59.9 (96.4 km).

DRAINAGE AREA.--895 mi² (2,318 km²).

PERIOD OF RECORD.--Water discharge: October 1928 to current year. Water temperatures March 1952 to September 1976.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1929-30(M), 1931, 1952-34(M).

GAGE.--Water-stage recorder. Datum of gage is 123.65 ft (37.689 m), revised, above mean sea level. Prior to Oct. 3, 1934, nonrecording gage at present site at datum 3.0 ft (0.91 m) higher.

REMARKS.--Records good. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft³/s (0.85 m³/s) of Skookumchuck River is consumptively used at Centralia stea generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft³/s (0.20 m³/s) for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--49 years, 2,831 ft³/s (80.17 m³/s), 42.96 in/yr (1,091 mm/yr), 2,051,000 acre-ft/yr (2,530 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,200 ft³/s (1,390 m³/s) Jan. 21, 1972, gage height, 18.21 ft (5.550 m); minimum, 82 ft³/s (2.32 m³/s) Aug. 30, 1967; minimum gage height, 0.83 ft (0.253 m) Aug. 27, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	2300	*15,200	430	*12.52	3.755

Minimum discharge, 142 ft³/s (4.02 m³/s) Aug. 18, gage height, 2.01 ft (0.613 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	292	1170	655	1100	858	8060	2370	726	3520	615	232	802
2	292	1220	645	1000	808	5100	2130	718	3690	682	222	670
3	296	672	660	973	696	4820	1910	955	2880	686	216	595
4	316	712	616	879	636	4400	1750	1500	2560	633	207	648
5	312	620	398	802	626	3610	1630	1060	2370	676	201	1210
6	296	568	386	760	580	2800	1550	1750	1980	656	195	976
7	292	515	398	606	576	3560	1500	1520	1670	667	192	756
8	286	690	663	596	536	9760	1480	1450	1460	606	189	622
9	288	688	916	563	520	13800	1490	1370	1300	379	186	550
10	288	665	906	546	563	13900	1430	1200	1190	371	177	520
11	304	460	701	850	823	6960	1320	1100	1090	367	171	488
12	312	425	682	736	920	6280	1230	1060	1060	363	168	447
13	300	421	623	858	1330	5210	1170	969	907	371	155	620
14	292	412	590	1000	1390	4220	1230	906	885	371	157	486
15	284	407	563	970	1160	3790	1150	936	814	359	162	388
16	296	650	557	1100	1030	3200	1200	1030	786	367	165	386
17	288	552	561	1180	963	2840	1230	1460	726	339	160	397
18	280	886	552	1160	969	2500	1150	1460	684	343	147	602
19	258	867	590	1260	969	2330	1090	1350	628	343	152	669
20	268	726	568	1190	1010	2160	1030	1190	610	323	152	871
21	265	646	566	1090	1110	1950	983	1100	600	303	195	1120
22	260	612	530	948	1910	1920	976	1030	600	299	162	1000
23	260	565	718	921	2730	1900	961	955	580	295	198	927
24	272	552	1090	850	2170	2150	885	880	550	286	307	1130
25	340	525	962	768	1770	2190	850	885	525	263	658	1250
26	921	557	1330	768	2030	2070	885	885	505	256	826	1490
27	756	525	3440	712	2930	2050	913	990	488	253	605	1290
28	530	695	2670	688	3320	3810	832	1190	465	253	469	1070
29	465	480	1950	670	---	3550	772	1750	467	249	460	1070
30	430	465	1550	652	---	3030	762	1560	429	246	1150	1040
31	425	---	1200	636	---	2570	---	1530	---	230	1490	---
TOTAL	10726	18187	27607	26851	33633	137350	37819	37260	36025	10655	10168	23625
MEAN	346	606	886	866	1201	4431	1261	1201	1201	344	328	788
MAX	921	1220	3440	1260	3320	13900	2370	1860	3690	676	1490	1490
MIN	258	407	386	546	520	1920	762	718	429	230	147	386
CFSM	.39	.68	.99	.97	1.34	4.95	1.41	1.34	1.34	.38	.37	.88
IN.	.45	.76	1.14	1.11	1.40	5.71	1.57	1.55	1.50	.44	.42	.98
AC-FT	21280	36070	54760	53260	66710	272000	75010	73870	71460	21130	20170	46860

CAL YR 1976 TOTAL 824570 MEAN 2253 MAX 27500 MIN 201 CFSM 2.52 IN 34.27 AC-FT 1636000
WTR YR 1977 TOTAL 409906 MEAN 1122 MAX 13900 MIN 147 CFSM 1.25 IN 17.02 AC-FT 812200

1203100 CHEHALIS RIVER AT PORTER, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 46°56'17", long 123°18'45", on north line of NE¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, in downstream end of left bank pier of Chehalis River bridge at mouth of Porter Creek, 0.1 mi (0.2 km) west of Porter, and at mile 33.3 (53.6 km).

DRAINAGE AREA.--1,294 mi² (3,351 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--January 1952 to September 1972, water years 1973-75 (annual maximum), May 1975 to current year.

REVISED RECORDS.--WSP 1716: Drainage area. WSP 1932: 1954, 1956, 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 23.64 ft (7.205 m), above mean sea level.

REMARKS.--Records good.. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft³/s (0.85 m³/s) of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft³/s (0.20 m³/s) for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--22 years (water years 1953-72, 1976-77), 4,210 ft³/s (119.2 m³/s), 44.18 in/yr (1,122 mm/yr), 3,050,000 acre-ft/yr (3,760 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,600 ft³/s (1,570 m³/s) Jan. 22, 1972, gage height, 23.88 ft (7.279 m); minimum, 164 ft³/s (4.64 m³/s) Oct. 17, 1952, gage height, 2.25 ft (0.686 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 28, 1937, reached a stage of 24.7 ft (7.53 m), from levels by Grays Harbor County.

Flood of December 1933 reached a stage of 23.13 ft (7.050 m), from river profile by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20,000 ft³/s (566 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 10	1500	*17,500	496	*18.34	5.590

Minimum discharge, 268 ft³/s (7.59 m³/s) Aug. 19, gage height, 2.88 ft (0.878 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	442	1030	610	1750	975	6640	3890	1130	3560	618	371	1420
2	446	1710	602	1570	1060	7130	3590	1120	4960	598	362	1010
3	446	1270	590	1470	1040	6400	3230	1300	4290	594	350	920
4	450	995	578	1360	960	6270	2950	1940	3680	614	341	1060
5	462	855	554	1230	910	5240	2710	2430	3540	646	335	1310
6	454	760	542	1120	880	4450	2560	2600	3080	660	329	1460
7	442	690	566	1010	850	5950	2440	2330	2620	634	326	1120
8	434	642	745	950	820	11200	2370	2090	2250	606	323	910
9	430	614	975	910	790	15400	2340	2060	1980	576	320	780
10	438	598	1390	850	865	17200	2270	1820	1790	554	314	700
11	442	578	1180	945	1090	15600	2140	1640	1630	550	305	655
12	454	554	1000	1100	1830	11100	1990	1530	1510	550	296	610
13	454	542	900	1240	2030	8640	1890	1440	1450	542	287	570
14	438	542	840	1390	2080	7130	1890	1370	1350	542	282	546
15	430	554	810	1500	1850	6320	1880	1360	1220	530	285	522
16	426	614	790	1570	1640	5660	1820	1430	1150	514	282	518
17	434	705	780	1910	1490	4980	1880	1670	1080	506	282	518
18	418	1000	810	2060	1400	4450	1800	2060	990	494	275	534
19	407	1270	825	2090	1290	4120	1690	1870	935	494	270	655
20	404	1070	815	2060	1240	3730	1590	1710	905	478	272	865
21	398	940	775	1850	1340	3450	1530	1550	900	454	272	1420
22	392	875	765	1660	2070	3300	1510	1450	900	434	277	1430
23	389	820	940	1500	3490	3340	1480	1360	865	430	305	1340
24	404	775	1300	1380	3270	3550	1400	1280	820	418	418	1400
25	558	770	1430	1280	2790	3610	1340	1240	780	404	900	1700
26	790	735	2140	1200	2860	3570	1370	1240	750	392	1060	1870
27	1050	730	4110	1130	3220	4170	1430	1320	720	386	930	1870
28	815	680	4260	1070	3770	5700	1340	1570	690	386	745	1550
29	675	646	3220	1030	---	5660	1250	2180	660	389	760	1480
30	614	630	2550	990	---	4990	1180	2290	642	383	1250	1470
31	785	---	2060	970	---	4380	---	2150	---	380	1960	---
TOTAL	15621	24274	39452	42145	47900	203330	60750	52530	51697	15754	15084	32213
MEAN	504	809	1273	1360	1711	6559	2025	1695	1723	508	487	1074
MAX	1050	1710	4260	2090	3770	17200	3890	2600	4960	660	1960	1870
MIN	389	542	542	850	790	3300	1180	1120	642	380	270	518
CFSM	.39	.63	.98	1.05	1.32	5.07	1.57	1.31	1.33	.39	.38	.83
IN.	.45	.70	1.13	1.21	1.38	5.85	1.75	1.51	1.49	.45	.43	.93
AC-FT	30980	48150	78250	83590	95010	403300	120500	104200	102500	31250	29920	63890

CAL YR 1976 TOTAL 1235979 MEAN 3377 MAX 35100 MIN 389 CFSM 2.61 IN 35.53 AC-FT 2452000
WTR YR 1977 TOTAL 600750 MEAN 1646 MAX 17200 MIN 270 CFSM 1.27 IN 17.27 AC-FT 1192000

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1959 to September 1960.
pH: July 1959 to September 1960.
WATER TEMPERATURES: July 1959 to September 1960, October 1961 to July 1972.
SUSPENDED SEDIMENT: October 1961 to September 1971.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, and specific conductance data furnished for half of the water-quality samples listed below by Washington State Department of Ecology. For the diel study, temperature, dissolved oxygen, pH, turbidity, specific conductance and coliform data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)
OCT										
06...	1405	454	98	7.4	15.0	4	--	--	--	--
19...	1030	407	95	7.5	10.6	2	830	3	--	17
NOV										
01...	0855	960	90	7.3	9.7	5	--	--	--	--
02...	1000	1820	77	7.3	9.5	7	B1600	--	84	--
DEC										
13...	0930	910	86	7.3	5.6	5	--	--	--	--
13...	1100	905	104	7.3	6.0	10	260	--	50	--
JAN										
17...	0920	1920	92	6.9	6.1	7	--	--	--	--
17...	1015	1920	68	7.2	5.5	10	B1600	--	92	--
FEB										
14...	0935	2130	86	7.1	7.1	8	--	--	--	--
14...	1015	2130	77	7.1	7.4	8	B2000	--	160	--
MAR										
14...	1000	7190	71	7.2	5.6	10	490	--	210	--
21...	0950	3460	85	6.9	8.2	5	--	--	--	--
APR										
18...	0930	1830	74	6.8	9.6	2	270	--	10	--
18...	0955	1830	78	7.0	9.0	3	--	--	--	--
MAY										
16...	0925	1420	90	6.7	12.0	2	--	--	--	--
24...	0945	1300	75	7.1	13.4	3	140	--	810	--
JUN										
20...	0950	905	93	7.1	16.6	3	--	--	--	--
22...	0930	905	81	6.8	16.5	2	3100	--	23	--
JUL										
25...	0940	407	102	7.1	19.7	4	--	--	--	--
25...	1000	407	88	7.2	20.0	1	4200	--	38	--
AUG										
02...	0800	362	103	7.8	21.9	35	100	--	13	--
15...	1130	285	95	6.6	22.3	2	3000	--	46	--
22...	0925	278	112	7.2	18.1	4	--	--	--	--
SEP										
12...	0945	614	97	7.2	16.2	--	--	--	--	--
21...	1100	1460	95	7.3	15.0	3	B1600	--	891	--
26...	0945	1820	96	6.9	12.5	4	--	--	--	--

B Results based upon colony counts outside the ideal range.

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
OCT									
06...	--	--	--	--	--	--	--	--	--
19...	--	33	0	8.5	2.8	6.0	.8	44	36
NOV									
01...	--	--	--	--	--	--	--	--	--
02...	90	28	0	7.5	2.2	5.7	.8	35	29
DEC									
13...	--	--	--	--	--	--	--	--	--
13...	380	33	4	7.9	3.2	5.9	.8	35	29
JAN									
17...	--	--	--	--	--	--	--	--	--
17...	590	26	1	6.5	2.3	5.3	.7	30	25
FEB									
14...	--	--	--	--	--	--	--	--	--
14...	1500	25	2	6.4	2.1	5.1	.6	28	23
MAR									
14...	8900	20	4	5.0	1.8	4.3	.6	19	16
21...	--	--	--	--	--	--	--	--	--
APR									
18...	23	26	0	6.8	2.2	4.9	.5	32	26
18...	--	--	--	--	--	--	--	--	--
MAY									
16...	--	--	--	--	--	--	--	--	--
24...	82	32	2	8.7	2.4	6.0	.6	36	30
JUN									
20...	--	--	--	--	--	--	--	--	--
22...	--	30	0	7.9	2.6	6.3	.6	38	31
JUL									
25...	--	--	--	--	--	--	--	--	--
25...	700	33	0	8.4	3.0	6.4	.7	43	35
AUG									
02...	--	38	5	9.1	3.7	8.1	1.2	40	33
15...	180	33	0	8.1	3.0	6.7	1.1	43	35
22...	--	--	--	--	--	--	--	--	--
SEP									
12...	--	--	--	--	--	--	--	--	--
21...	B100	34	5	8.9	2.9	6.6	.9	35	29
26...	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT									
06...	--	--	--	--	--	--	--	--	.29
19...	2.2	3.7	5.6	.1	16	69	65	0	.27
NOV									
01...	--	--	--	--	--	--	--	--	.76
02...	2.8	5.8	5.6	.1	15	65	60	26	.37
DEC									
13...	--	--	--	--	--	--	--	--	.50
13...	2.8	6.6	5.7	.1	16	79	63	15	.42
JAN									
17...	--	--	--	--	--	--	--	--	.63
17...	3.0	5.8	5.0	.0	16	62	57	3	.63
FEB									
14...	--	--	--	--	--	--	--	--	.52
14...	3.6	4.8	4.5	.1	14	58	51	10	.47
MAR									
14...	1.9	5.5	4.8	.0	14	55	45	15	1.1
21...	--	--	--	--	--	--	--	--	.71
APR									
18...	8.1	3.2	4.8	.1	16	64	54	4	.39
18...	--	--	--	--	--	--	--	--	.39
MAY									
16...	--	--	--	--	--	--	--	--	.25
24...	4.6	3.3	4.3	.0	14	53	57	2	.25
JUN									
20...	--	--	--	--	--	--	--	--	.14
22...	9.6	2.2	5.3	.0	15	66	59	16	.19
JUL									
25...	--	--	--	--	--	--	--	--	.27
25...	4.3	2.4	5.6	.1	16	63	64	--	.08
AUG									
02...	1.0	6.2	7.9	.0	17	--	73	--	--
15...	17	3.8	6.7	.1	19	68	70	2	.07
22...	--	--	--	--	--	--	--	--	.06
SEP									
12...	--	--	--	--	--	--	--	--	.33
21...	2.8	7.6	6.7	.1	16	76	67	10	.32
26...	--	--	--	--	--	--	--	--	.40

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT									
06...	.01	--	.04	.23	.06	.03	--	--	--
19...	.01	.28	.04	.21	.06	.03	6	6.6	100
NOV									
01...	.01	--	.07	.38	.06	.03	--	--	--
02...	.01	.38	.10	.36	.10	.04	17	84	100
DEC									
13...	.01	--	.05	.31	.04	.01	--	--	--
13...	.01	.43	.06	.24	.06	.03	4	9.8	94
JAN									
17...	.01	--	.09	.26	.06	.02	--	--	--
17...	.01	.64	.09	.29	.06	.02	7	36	96
FEB									
14...	.01	--	.14	.50	.07	.02	--	--	--
14...	.01	.48	.10	.34	.06	.02	5	29	96
MAR									
14...	.01	1.1	.11	.37	.06	.01	15	291	94
21...	.01	--	.09	.31	.05	.01	--	--	--
APR									
18...	.01	.40	.05	.36	.05	.02	2	9.9	79
18...	.01	--	.07	.15	.04	.02	--	--	--
MAY									
16...	.01	--	.07	.21	.04	.01	--	--	--
24...	.01	.26	.05	.16	.04	.02	3	11	74
JUN									
20...	.01	--	.08	.39	.05	.01	--	--	--
22...	.01	.20	.06	.26	.04	.01	2	4.9	76
JUL									
25...	.01	--	.12	.37	.06	.02	--	--	--
25...	.01	.09	.10	.30	.06	.02	5	5.5	100
AUG									
02...	--	.01	.13	.60	.08	.01	--	--	--
15...	.01	.08	.08	.36	.06	.02	6	4.6	95
22...	.01	--	.09	.34	.05	.02	--	--	--
SEP									
12...	.01	--	.08	.22	.05	.04	--	--	--
21...	.01	.33	.07	.22	.08	.05	9	35	93
26...	.01	--	.09	.34	.06	.02	--	--	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT												
19...	1030	1	1	<10	0	0	0	<50	0	<10	1	410
JAN												
17...	1015	1	1	<10	0	0	0	<50	0	<10	0	920
APR												
18...	0930	0	0	<10	0	<10	0	<50	0	<10	0	580
JUL												
25...	1000	0	0	<10	0	0	0	<50	0	10	2	300

DATE	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT												
19...	180	100	2	10	10	.0	.0	0	0	0	0	5.0
JAN												
17...	200	<100	2	20	10	.2	.0	0	0	20	0	2.3
APR												
18...	180	<100	0	20	10	.0	.0	0	0	20	10	2.4
JUL												
25...	100	<100	1	20	4	.1	.0	0	2	20	6	2.2

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./ 100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
02...	0800	362	103	7.8	21.9	4	8.2	92	100	13	38
02...	1115	362	86	8.0	22.4	--	9.1	103	--	--	--
02...	1400	362	85	8.5	23.6	4	10.8	125	>20	18	--
02...	1710	362	--	8.5	24.1	--	11.6	136	--	--	--
02...	2000	359	89	9.2	23.6	3	11.6	134	<100	18	--
02...	2330	356	93	8.2	23.0	--	10.4	119	--	--	--
03...	0212	353	95	8.4	22.7	--	9.8	112	--	--	--
03...	0503	353	95	8.2	21.8	--	8.6	97	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
02...	5	9.1	3.7	8.1	1.2	40	0	33	1.0	6.2
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	37	0	30	.2	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
02...	7.9	.0	17	73	11	.01	.13	.60	.08	.01
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	12	.01	.13	.55	.08	.01
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	OCT 19,76	NOV 2,76	DEC 13,76	JAN 17,77	FEB 14,77
TIME	1030	1000	1100	1015	1015
TOTAL CELLS/ML	330	300	72	800	1500
DIVERSITY: DIVISION	1.4	1.2	1.2	0.5	0.0
.CLASS	1.4	1.2	1.2	0.5	0.0
..ORDER	1.9	1.8	1.9	1.2	0.0
...FAMILY	3.2	2.5	3.0	1.9	2.4
....GENUS	3.5	2.6	3.0	2.0	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	5	2	--	-	3	4	10	1	--	-
....DICTYOSPHAERIUM	*	0	--	-	--	-	--	-	--	-
....FRANCEIA	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	5	1	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	19	2	--	-
....SCENEDESMUS	40	12	12	4	210#	29	5	1	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	3	4	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	4	1	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	30	9	4	1	--	-	--	-	31	2
....MELOSIRA	30	9	97#	32	150#	21	140#	18	320#	22
...RHIZOSOLENIACEAE										
....RHIZOSOLENIA	25	8	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	5	2	8	3	*	0	19	2	230#	15
....COCCONEIS	15	5	4	1	3	4	*	0	31	2
....RHOICOSPHENIA	--	-	*	0	*	0	5	1	--	-
...CYMBELLACEAE										
....AMPHORA	5	2	--	-	--	-	--	-	--	-
....CYMBELLA	10	3	4	1	6	8	14	2	93	6
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
....DIATOMA	15	5	12	4	*	0	--	-	--	-
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	10	1
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	*	0	--	-	400#	60	--	-
....SYNEDRA	15	5	4	1	3	4	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEIS	*	0	--	-	--	-	--	-	--	-
....GOMPHONEMA	--	-	*	0	3	4	--	-	62	4
...MERIDIONACEAE										
....MERIDION	--	-	--	-	--	-	5	1	10	1
...NAVICULACEAE										
....NAVICULA	10	3	--	-	6	8	--	-	260#	18
....PINNULARIA	--	-	4	1	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	15	5	16	5	6	8	62	8	420#	29
...SURIRELLACEAE										
....SURIRELLA	--	-	*	0	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
SAMPLING METHOD: EDI

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 19,76 1030		NOV 2,76 1000		DEC 13,76 1100		JAN 17,77 1015		FEB 14,77 1015	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	38	5	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	35	11	28	9	--	-	--	-	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	74#	23	110#	35	--	-	*	0	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.CRYPTOPHYCEAE										
..CRYPTOMONIDALES										
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	3	4	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
SAMPLING METHOD: EDI

DATE TIME	MAY 24,77 0945	JUN 22,77 0930	JUL 25,77 1000	AUG 15,77 1130	SEP 21,77 1100
TOTAL CELLS/ML	1600	4400	27000	23000	540
DIVERSITY: DIVISION	0.0	0.8	0.6	1.0	1.1
.CLASS	0.0	0.8	0.6	1.0	1.1
..ORDER	0.3	2.0	0.9	1.1	1.5
...FAMILY	2.5	2.5	1.9	1.1	2.8
....GENUS	3.0	2.5	2.2	1.3	3.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	1900	7	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	*	0	--	-	--	-
....MICRACTINIUM	--	-	--	-	830	3	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	620	2	650	3	--	-
....DICTYOSPHAERIUM	--	-	690#	16	16000#	60	15000#	64	--	-
....FRANCEIA	--	-	*	0	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	150	1	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	9	2
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	320	1	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	690#	16	1700	6	--	-	--	-
....SCENEDESMUS	--	-	*	0	830	3	--	-	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	170	4	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	1800#	41	1800	7	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	44	3	520	12	2200	8	6800#	29	--	-
....MELOSIRA	44	3	*	0	*	0	--	-	9	2
...RHIZOSOLENIACEAE										
....RHIZOSOLENIA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	230	15	*	0	--	-	--	-	14	3
....COCCONEIS	98	6	43	1	*	0	--	-	84#	15
....RHOICOSPHENIA	33	2	*	0	--	-	--	-	--	-

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 24,77 0945		JUN 22,77 0930		JUL 25,77 1000		AUG 15,77 1130		SEP 21,77 1100	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	--	-	--	-	23	4
....CYMBELLA	98	6	210	5	--	-	--	-	--	-
....EPITHEMIA	--	-	*	0	--	-	--	-	14	3
...DIATOMACEAE										
....DIATOMA	11	1	150	3	--	-	--	-	14	3
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	44	3	--	-	--	-	--	-	--	-
....FRAGILARIA	420#	27	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	66	9
...GOMPHONEMATACEAE										
....GOMPHONEIS	--	-	--	-	--	-	--	-	--	-
....GOMPHONEMA	54	3	*	0	--	-	--	-	23	4
...MERIDIONACEAE										
....MERIDION	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	160	10	*	0	*	0	*	0	33	6
....PINNULARIA	11	1	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	300#	20	*	0	--	-	--	-	23	4
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	410	2	490	2	280#	38
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-
....PHORMIDIUM	--	-	--	-	--	-	--	-	66	9
EUGLENOPHYTA (EUGLENOIDS)										
.CRYPTOPHYCEAE										
..CRYPTOMONIDALES										
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	*	0	--	-
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	*	0	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...PERIDINIACEAE										
....PERIDINIUM	--	-	*	0	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%
SAMPLING METHOD: EDI

DATE	TIME	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
OCT							
19...	1030	--	6.62	14.0	--	--	29
FEB							
14...	1015	476	2.39	3.16	.166	1.64	28

SAMPLING METHOD: Polyethylene strip.

12032500 CLOQUALLUM CREEK AT ELMA, WA

LOCATION.--Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, Hydrologic Unit 17100104, at former gaging station on U.S. Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, and 1.9 mi (3.1 km) downstream from Wildcat Creek, at mile 1.9 (3.1 km).

DRAINAGE AREA.--64.9 mi² (168.1 km²).

PERIOD OF RECORD.--Water years 1962-65, 1972-73, 1975, October 1976 to September 1977 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1972 to March 1973.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
04...	0825	29	81	7.3	10.2	--	3	10.7	.19	.02	.03	.01
18...	0835	27	84	7.3	7.7	33	4	10.1	.20	.02	.03	.01
NOV												
01...	0920	25	75	7.2	9.6	120	4	10.0	1.1	.08	.05	.01
15...	1025	59	85	7.1	9.1	95	30	10.6	.29	.05	.04	.00
DEC												
06...	0855	52	84	7.3	5.7	29	7	11.7	.46	.04	.03	.01
13...	0950	77	80	7.4	7.2	33	2	11.6	.67	.04	.03	.02
JAN												
03...	0845	133	78	7.3	4.3	36	3	12.0	.89	.04	.02	.01
17...	0945	410	65	6.8	7.2	70	7	11.3	1.1	.08	.05	.01
FEB												
07...	1045	86	80	7.6	5.6	25	4	12.2	.59	.03	.02	.01
14...	1000	244	69	7.3	6.1	29	3	11.7	1.1	.08	.03	.01
MAR												
07...	0930	1420	69	6.8	6.7	100	40	10.8	.90	.12	.29	.01
21...	1010	264	63	7.2	8.0	29	3	11.5	.67	.07	.03	.01
APR												
04...	1000	173	75	7.1	8.4	17	4	11.2	.61	.03	.02	.01
18...	1015	128	66	7.4	8.0	29	2	11.8	.47	.05	.02	.01
MAY												
02...	0930	102	80	6.4	11.9	25	2	9.9	.39	.03	.03	.01
16...	0955	105	70	6.1	9.3	46	2	11.0	.30	.05	.03	.00
JUN												
06...	1000	167	55	7.3	14.0	33	2	11.0	.50	.05	.03	.01
20...	1030	69	80	7.1	12.3	29	2	10.1	.33	.04	.03	.02
JUL												
11...	0915	46	81	7.4	13.2	25	2	9.6	.25	.05	.03	.02
25...	1020	32	86	6.8	14.2	21	4	9.1	.31	.05	.01	.01
AUG												
08...	0920	30	90	7.1	14.6	25	2	9.5	.29	.05	.14	.01
22...	1000	25	89	6.6	14.3	29	3	9.6	.29	.03	.03	.01
SEP												
12...	1010	56	86	7.2	12.2	33	4	9.9	.39	.06	.03	.02
26...	1010	212	71	6.7	10.5	50	3	10.5	.66	.06	.04	.00

12035000 SATSOP RIVER NEAR SATSOP, WA

LOCATION.--Lat 47°00'03", long 123°29'37", in NE¼SE¼ sec.36, T.18 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, in west pier of bridge on old U.S. Highway 410, 0.6 mi (1.0 km) west of Satsop, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--299 mi² (774 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Water discharge March 1929 to current year. Chemical analyses July 1960 to September 1971, October 1974 to September 1975, sediment records November 1961 to June 1965 (partial-record station).

REVISED RECORDS.--WSP 1286: 1930-35(M), 1937(M). WSP 1716: Drainage area. WSP 1932: 1945, 1949(M), 1951(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Mar. 19, 1938, nonrecording gage at site 60 ft (18 m) upstream at datum 20.9 ft (6.37 m) higher.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--48 years, 2,022 ft³/s (57.26 m³/s) 91.84 in/yr (2,333 mm/yr), 1,465,000 acre-ft/yr, (1,810 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,600 ft³/s (1,320 m³/s) Jan. 22, 1935, elevation, 38.9 ft (11.86 m), from floodmarks, present datum; minimum, 166 ft³/s (4.70 m³/s) Sept. 21, 1938; minimum elevation, 21.66 ft (6.602 m), present datum, Sept. 3-6, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of 37.1 ft (11.31 m), from high-water mark, at railroad bridge 300 ft (91 m) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,500 ft³/s (382 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	2400	*15,100	428	*30.41	9.269

Minimum discharge, 259 ft³/s (7.33 m³/s) Oct. 21, 25, gage height, 22.26 ft (6.785 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	294	1600	628	1350	1450	3440	1750	851	2080	466	311	664
2	290	986	598	1200	1240	2910	1600	886	1760	455	307	640
3	312	767	574	1190	1130	2900	1480	1210	1500	455	303	1010
4	298	652	550	1080	1070	2460	1380	1350	1600	460	303	1150
5	291	586	532	986	1010	2160	1320	1320	1610	455	299	1310
6	286	532	520	921	956	2150	1270	1230	1390	460	299	1030
7	282	496	574	865	914	8960	1230	1130	1230	440	299	844
8	279	472	1180	823	872	11300	1210	1070	1110	425	295	730
9	283	455	1710	774	851	10200	1310	986	1010	415	291	664
10	300	435	1270	742	1470	6360	1330	921	942	410	287	610
11	305	415	1210	837	2370	4590	1270	879	872	410	283	568
12	291	405	1170	1360	2670	4070	1190	830	823	410	279	538
13	285	390	1090	1470	3060	3410	1180	816	781	395	275	500
14	279	395	1010	1310	2300	2940	1100	838	754	390	279	484
15	275	514	1290	1530	1840	2610	1160	809	730	385	275	466
16	273	682	1760	1920	1650	2300	1160	795	706	380	275	466
17	271	1040	1640	4160	1530	2040	1090	754	676	390	271	460
18	267	2070	1700	7750	2220	1880	1040	730	646	375	267	478
19	263	1410	1420	5640	1860	1740	986	700	634	365	271	640
20	263	1150	1230	3570	1720	1620	949	682	622	355	271	1160
21	263	994	1110	2610	2040	1680	928	706	616	355	271	1090
22	263	907	1010	2080	3380	1760	1000	712	622	346	271	893
23	261	809	1050	1760	3010	2040	963	682	586	342	307	893
24	299	760	942	1560	2300	2200	907	664	562	337	415	963
25	532	963	1070	1410	2110	2080	879	652	550	333	978	1250
26	574	879	5180	1290	2150	2160	1030	724	532	320	1350	1320
27	455	795	5200	1190	2570	3470	1150	788	514	328	774	1110
28	420	762	3170	1110	3380	3150	1020	2090	502	324	712	970
29	415	700	2200	1030	---	2600	942	1830	496	324	851	956
30	398	664	1810	970	---	2190	893	1420	478	319	1000	851
31	1070	---	1530	1090	---	1960	---	1530	---	315	788	---
TOTAL	10637	24465	46088	55658	53123	105390	34717	30577	26934	11947	13457	24716
MEAN	343	816	1487	1795	1897	3400	1157	986	898	385	434	824
MAX	1070	2070	5200	7750	3380	11300	1750	2090	2080	466	1350	1320
MIN	261	390	520	742	851	1620	879	652	478	315	267	460
CFSM	1.15	2.73	4.97	6.00	6.34	11.4	3.87	3.30	3.00	1.29	1.45	2.76
IN.	1.32	3.04	5.73	6.92	6.61	13.11	4.32	3.80	3.35	1.49	1.67	3.08
AC-FT	21100	48530	91420	110400	105400	209000	68860	60650	53420	23700	26690	49020

CAL YR 1976 TOTAL 617083 MEAN 1686 MAX 20800 MIN 261 CFSM 5.64 IN 76.78 AC-FT 1224000
WTR YR 1977 TOTAL 437709 MEAN 1199 MAX 11300 MIN 261 CFSM 4.01 IN 54.46 AC-FT 868200

12035000 SATSOP RIVER NEAR SATSOP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-71, 1975, October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, specific conductance, and coliform data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
04...	0845	299	75	7.3	10.3	--	2	10.1	.02	.02	.02	.00
18...	0900	263	75	7.4	7.7	13	6	10.7	.01	.02	.01	.00
NOV												
01...	0935	1650	66	7.3	9.2	55	15	10.6	.02	.16	.06	.00
15...	1055	502	87	7.4	8.7	80	120	11.7	.15	.05	.01	.00
DEC												
06...	0920	514	74	7.3	5.6	13	5	12.1	.26	.02	.01	.00
13...	1010	1090	55	7.4	7.2	17	3	11.0	.36	.02	.01	.00
JAN												
03...	0910	1200	68	7.3	4.2	13	1	12.0	.48	.02	.01	.00
17...	1010	4160	57	6.9	7.1	42	20	11.6	.63	.10	.09	.00
FEB												
07...	1125	914	68	7.4	6.1	13	2	12.0	.31	.02	.01	.00
14...	1020	2330	59	7.3	6.3	13	4	12.0	.44	.05	.02	.01
MAR												
07...	1000	7700	49	7.0	6.3	55	40	11.4	.67	.00	.23	.00
21...	1030	1670	53	7.3	7.8	13	1	11.0	.34	.05	.01	.00
APR												
04...	1025	1390	66	7.0	8.8	8	2	11.6	.08	.02	.01	.00
18...	1030	1040	61	7.0	8.0	13	3	12.2	.27	.05	.02	.01
MAY												
02...	0945	844	65	6.8	11.4	8	1	10.3	.16	.01	.02	.00
16...	1020	795	65	6.3	9.7	21	1	11.4	.14	.04	.01	.00
JUN												
06...	1025	1400	50	7.6	14.5	13	3	11.5	.18	.04	.01	.01
20...	1100	622	69	7.1	12.6	21	2	10.8	.09	.03	.01	.00
JUL												
11...	0945	410	63	7.9	13.6	5	1	9.8	.21	.12	.04	.00
25...	1045	333	75	7.2	15.2	8	3	8.9	.18	.04	.01	.00
AUG												
02...	0855	307	66	7.4	16.1	--	2	9.1	.11	.16	.02	.00
08...	0945	295	80	7.3	15.0	13	<1	10.1	.12	.02	.06	.00
22...	1025	271	81	7.0	14.1	13	1	10.5	.10	.02	.01	.00
SEP												
12...	1030	538	72	7.4	13.2	13	2	10.8	.12	.02	.01	.00
26...	1030	1340	65	6.8	10.3	38	3	11.2	.34	.04	.02	.00

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./ 100 ML)	HARD-NESS (CA,MG) (MG/L)
AUG											
02...	0855	307	66	7.4	16.1	2	9.1	91	100	10	30
02...	1145	307	62	7.3	17.8	--	9.8	101	--	--	--
02...	1430	307	65	7.4	20.0	1	9.7	105	40	2	--
02...	1735	303	64	7.1	20.8	--	9.7	107	--	--	--
02...	2030	303	68	7.4	19.6	1	8.8	95	120	16	--
02...	2359	303	71	6.8	19.1	--	8.2	87	--	--	--
03...	0235	303	70	6.8	18.2	--	8.1	85	--	--	--
03...	0550	303	68	6.8	17.0	--	8.2	84	--	--	--

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
AUG										
02...	5	7.7	2.5	3.4	.5	30	0	25	1.9	3.6
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	29	0	24	1.8	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

12035000 SATSOP RIVER NEAR SATSOP, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SUS-PENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
AUG										
02...	2.6	.0	16	51	6	.11	.10	.16	.02	.00
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	6	.11	.04	.11	.01	.00
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

12035380 WYNOOCHEE LAKE NEAR GRISDALE, WA

LOCATION.--Lat 47°23'08", long 123°36'16", in NE¼NW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, in monolith No. 6, near center line axis of Wynoochee Dam on Wynoochee River, 2.0 mi (3.2 km) north of Grisdale, at river mile 51.8 (83.3 km).

DRAINAGE AREA.--41.0 mi^2 (106.2 km^2).

PERIOD OF RECORD.- October 1972 to current year.

GAGE.--Nonrecording gage. Datum of gage is at mean sea level (levels by Corps of Engineers). Prior to May 22, 1973, staff gage on upstream face of dam.

REMARKS.--Reservoir is formed by concrete gravity type dam with gate-type spillway; construction began in 1969; completed in 1972. Usable capacity, 67,288 acre-ft (83.0 hm^3) between elevation 690 ft (210.3 m), sluice invert level, and 800 ft (243.8 m), full pool elevation. Dead storage, 2,117 acre-ft (2.61 hm^3) below elevation 690 ft (210.3 m). Figures given herein represent total contents. Water is used for flood control, water supply and recreation.

COOPERATION.--Elevation at 0800 and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 69,610 acre-ft (85.8 hm^3/yr), June 11, 1974, elevation, 800.18 ft (243.895 m); minimum observed, 12,210 acre-ft (15.1 hm^3/yr) Oct. 31, 1972, elevation, 725.7 ft (221.19 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 69,181 acre-ft (85.3 hm^3/yr), June 17, elevation, 799.80 ft (243.779 m); minimum observed, 33,746 acre-ft (41.6 hm^3/yr) Nov. 14, elevation, 761.72 ft (232.172 m).

ESTIMATED MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	777.99	47,122	-
Oct. 31	765.22	36,438	-10,684
Nov. 30	763.14	34,828	-1,610
Dec. 31	764.34	35,753	+925
CAL YR 1976	-	-	+224
Jan. 31	763.78	35,320	-433
Feb. 28	784.47	53,166	+17,846
Mar. 31	789.06	57,708	+4,542
Apr. 30	794.66	63,541	+5,833
May 31	799.06	68,352	+4,811
June 30	798.52	67,751	-601
July 31	791.30	60,001	-7,750
Aug. 31	784.99	53,670	-6,331
Sept. 30	777.73	46,889	-6,781
WTR YR 1977			-233

12035400 WYNOOCHEE RIVER NEAR GRISDALE, WA

LOCATION.--Lat 47°22'50", long 123°36'31", in SW¼SW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on right bank 0.5 mi (0.8 km) downstream from Wynoochee Dam, 1.7 mi (2.7 km) north of Grisdale, 1.7 mi (2.7 km) downstream from Scatter Creek, and at mile 51.3 (82.5 km).

DRAINAGE AREA.--41.3 mi² (107.0 km²).

PERIOD OF RECORD.--October 1965 to current year. Sediment records February 1966 to May 1967.

GAGE.--Water-stage recorder. Altitude of gage is 630 ft (192 m), from topographic map. Prior to Nov. 3, 1967, at site 1,500 ft (457 m) upstream at different datum.

REMARKS.--Records good. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--12 years, 547 ft³/s (15.49 m³/s), 179.86 in/yr (4,568 mm/yr), 396,300 acre-ft/yr (489 hm³/yr), adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft³/s (334 m³/s) Dec. 12, 1966, gage height, about 18.0 ft (5.49 m), computed from graph based on gage readings, site and datum then in use; minimum, 0.9 ft³/s (0.025 m³/s) Sept. 10, 12, 1974, gage height, 0.06 ft (0.018 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,540 ft³/s (71.9 m³/s) Jan. 18, gage height, 4.08 ft (1.244 m); minimum, 186 ft³/s (5.27 m³/s) Feb. 8, 9; minimum gage height, 1.33 ft (0.405 m) Dec. 2-8, Feb. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	295	510	265	455	604	435	270	415	1100	221	207	215
2	415	540	212	455	279	435	271	435	813	220	220	215
3	415	420	194	364	212	435	271	932	633	220	219	215
4	355	319	194	270	212	396	271	1000	634	220	220	215
5	368	260	194	235	208	373	271	561	635	220	220	215
6	319	260	194	208	212	378	271	443	556	219	218	215
7	205	260	194	208	212	663	271	463	301	218	219	215
8	205	245	320	208	194	1470	312	444	218	218	218	215
9	205	221	373	208	186	1480	304	389	219	218	218	215
10	205	208	342	208	191	1000	304	337	221	218	218	215
11	205	208	342	208	191	700	304	337	221	218	218	215
12	279	208	342	212	194	600	309	337	221	218	218	215
13	351	208	342	212	194	600	372	330	221	218	218	215
14	346	208	342	270	194	510	339	330	221	218	218	215
15	351	208	450	420	197	415	326	330	221	218	218	215
16	408	283	415	420	197	369	314	322	221	218	218	336
17	408	690	615	1040	200	319	313	246	221	218	218	416
18	291	820	615	2130	200	260	273	218	221	218	219	412
19	208	471	615	1600	200	231	237	218	221	218	218	416
20	208	291	466	604	202	231	238	218	221	218	215	560
21	228	275	364	370	202	231	238	218	221	218	215	613
22	231	260	315	370	205	231	285	219	221	218	215	611
23	275	245	291	370	205	231	319	220	221	218	215	721
24	268	249	291	370	205	233	319	221	221	218	216	821
25	271	249	291	311	205	273	320	222	221	218	216	816
26	477	249	363	212	205	299	497	222	221	218	215	604
27	670	249	1100	212	208	299	476	224	221	218	215	575
28	642	249	1960	212	328	299	356	225	221	218	215	534
29	466	249	1640	212	---	299	305	225	221	217	215	491
30	368	249	924	212	---	299	415	225	221	216	215	466
31	308	---	460	477	---	283	---	570	---	209	215	---
TOTAL	10246	9369	15153	13473	6322	14553	9809	11100	9750	6758	6722	11613
MEAN	331	312	489	435	226	469	327	358	325	218	217	387
MAX	670	820	1960	2130	604	1480	497	1000	1100	221	220	821
MIN	208	208	194	208	186	231	237	218	218	209	207	215
AC-FT	20320	18580	30060	26720	12540	28870	19460	22030	19340	13400	13330	23030
†	-10,684	-1,610	+925	-433	+17,846	+4,542	+5,833	+4,811	-601	-7,750	-6,331	-6,781
MEAN‡	157	285	504	427	547	543	425	436	315	91.9	114	273
CFSM‡	3.80	6.90	12.2	10.3	13.2	13.1	10.3	10.6	7.63	2.23	2.76	6.61
IN.‡	4.37	7.70	14.06	11.94	13.80	15.17	11.48	12.19	8.51	2.57	3.18	7.38
AC-FT‡	9,636	16,970	30,980	26,290	30,390	33,410	25,290	26,840	18,740	5,650	6,999	16,250

CAL YR 1976: TOTAL 148,910 MEAN 407 MAX 3,010 MIN 194 AC-FT 295,400
DO......: MEAN‡ 407 CFSM‡9.85 IN.‡134.20 AC-FT‡ 295,600
WTR YR 1977: TOTAL 124,876 MEAN 342 MAX 2,130 MIN 186 AC-FT 247,700
DO......: MEAN‡ 342 CFSM‡8.28 IN.‡112.56 AC-FT‡ 247,500

† Change in contents, in acre-feet, in Wynoochee Lake.
‡ Adjusted for change in reservoir contents.

12035450 BIG CREEK NEAR GRISDALE, WA

LOCATION.--Lat 47°22'28", long 123°36'08", in SE¼SE¼ sec.24, T.22 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on left bank 280 ft (85 m) upstream from road bridge, 1.5 mi (2.4 km) northwest of Grisdale, and 0.6 mi (1.0 km) upstream from mouth.

DRAINAGE AREA.--9.57 mi² (24.79 km²).

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from topographic map.

REMARKS.--Records good, except those for period of no gage-height record Dec. 11 to Feb. 1, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--5 years, 118 ft³/s (3.34 m³/s), 167.44 in/yr (4,253 mm/yr), 85,490 acre-ft/yr (105 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s (78.2 m³/s) Dec. 26, 1973, gage height, 8.89 ft (2.710 m), from rating curve extended above 1,500 ft³/s (42.5 m³/s); minimum, 9.9 ft³/s (0.28 m³/s) part or all of each day Aug. 15-23, 1977.

EXTREMES FOR CURRENT YEAR.-- Peak discharges above base of 1,100 ft³/s (31.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1700	*1,250	35.4	*6.62	2.018

Minimum discharge, 9.9 ft³/s (0.28 m³/s) part or all of each day Aug. 15-23, gage height, 3.14 ft (0.957 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	93	36	68	90	195	80	44	147	23	12	33
2	19	57	34	64	68	166	72	51	103	22	12	44
3	18	44	32	60	57	134	67	145	87	22	12	44
4	17	38	30	54	54	118	65	113	150	21	12	89
5	17	34	29	50	50	104	65	98	117	21	12	71
6	16	31	28	46	48	225	62	92	93	21	12	51
7	16	29	38	43	45	863	59	69	78	20	12	43
8	16	29	180	40	43	537	59	61	67	20	12	37
9	17	26	106	38	42	433	83	54	61	19	12	33
10	20	25	72	36	217	244	81	51	56	19	12	31
11	19	24	71	45	182	197	76	47	51	19	12	29
12	18	23	64	68	285	185	67	44	48	19	12	26
13	17	22	61	80	192	165	65	48	45	17	11	25
14	17	32	58	68	120	121	59	47	43	17	11	24
15	17	45	160	90	94	107	65	45	40	17	11	23
16	16	188	120	150	96	97	64	44	38	17	9.9	22
17	16	309	170	300	102	87	59	41	36	17	9.9	22
18	16	138	125	700	202	81	56	40	35	16	9.9	24
19	15	92	96	300	122	78	51	38	33	16	9.9	105
20	15	72	78	180	132	72	48	37	32	15	9.9	125
21	15	63	68	125	213	91	50	44	32	15	9.9	93
22	15	54	62	100	440	103	61	40	31	15	9.9	67
23	15	49	57	86	222	152	53	37	29	14	14	65
24	28	63	54	76	144	147	48	37	29	14	25	72
25	101	67	60	66	120	115	47	37	27	14	107	137
26	57	54	500	60	106	192	47	53	26	14	71	89
27	38	49	250	54	167	195	62	121	25	13	38	69
28	37	44	165	50	246	135	56	200	25	13	51	61
29	33	41	120	47	---	111	51	115	24	13	51	53
30	31	38	98	45	---	95	47	85	23	13	48	67
31	219	---	80	70	---	85	---	137	---	13	38	---
TOTAL	928	1877	3078	3279	3959	5570	1845	2104	1631	529	689.3	1674
MEAN	29.9	62.6	99.3	106	141	180	61.5	67.9	54.4	17.1	22.2	55.8
MAX	219	309	500	700	440	863	83	200	150	23	107	137
MIN	15	22	28	36	42	72	47	37	23	13	9.9	22
CFSM	3.12	6.54	10.4	11.1	14.7	18.8	6.43	7.10	5.68	1.78	2.32	5.83
IN.	3.61	7.30	11.96	12.76	15.39	21.65	7.17	8.18	6.34	2.06	2.68	6.51
AC-FT	1840	3720	6110	6500	7850	11050	3660	4170	3240	1050	1370	3320

CAL YR 1976 TOTAL 31339.0 MEAN 85.6 MAX 980 MIN 15 CFSM 8.95 IN 121.82 AC-FT 62160
WTR YR 1977 TOTAL 27163.3 MEAN 74.4 MAX 863 MIN 9.9 CFSM 7.77 IN 105.58 AC-FT 53880

12036000 WYNOOCHEE RIVER ABOVE SAVE CREEK, NEAR ABERDEEN, WA

LOCATION.--Lat 47°17'57", long 123°39'07", in NE¼NE¼ sec.23, T.21 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 0.8 mi (1.3 km) upstream from Save Creek, 2.5 mi (4.0 km) downstream from Oxbow Dam site, 11.0 mi (17.7 km) downstream from Wynoochee Dam, 23.5 mi (37.8 km) northeast of city hall in Aberdeen, and at mile 40.6 (65.3 km).

DRAINAGE AREA.--74.1 mi² (191.9 km²).

PERIOD OF RECORD.--May 1925 to current year. Published as "at Oxbow, near Aberdeen" 1925-52, where drainage area was 70.7 mi² (183.1 km²). Records published for both sites October 1951 to October 1952.

REVISED RECORDS.--WSP 1346: 1952. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401 ft (122.2 m) above mean sea level, stadia traverse. Prior to Nov. 7, 1925, nonrecording gage at site 2.3 mi (3.7 km) upstream at different datum. Nov. 7, 1925, to Sept. 3, 1947, water-stage recorder at site 1.5 mi (2.4 km) upstream at datum 444.0 ft (135.33 m) above mean sea level (levels by city of Aberdeen). Sept. 4, 1947, to Oct. 13, 1952, water-stage recorder at site 2.5 mi (4.0 km) upstream at datum about 91 ft (27.7 m) higher. Oct. 5, 1951 to Sept. 30, 1976, water-stage recorder on left bank at same site and datum.

REMARKS.--Records excellent. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--52 years, 825 ft³/s (23.36 m³/s), 151.19 in/yr (3,840 mm/yr), 597,700 acre-ft/yr (737 hm³/yr), adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,600 ft³/s (668 m³/s) Dec. 9, 1956, gage height, 16.95 ft (5.166 m), from rating curve extended above 9,000 ft³/s (255 m³/s); minimum, 57 ft³/s (1.61 m³/s) Sept. 3, 4, 5, 1972, gage height, 4.43 ft (1.350 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,970 ft³/s (112 m³/s) Mar. 7, gage height, 8.41 ft (2.563 m); minimum, 246 ft³/s (6.97 m³/s) Oct. 22, gage height, 5.07 ft (1.545 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	754	355	714	1010	993	536	564	1480	315	275	310
2	474	738	330	714	536	906	522	606	1160	315	280	335
3	468	585	300	613	414	874	494	1180	922	315	280	384
4	402	450	295	480	408	778	487	1310	1020	310	280	426
5	402	372	290	432	390	706	480	850	966	310	280	396
6	372	360	300	390	372	938	474	676	850	310	280	355
7	260	355	335	378	366	2590	462	648	564	305	280	335
8	260	340	702	366	350	3150	487	627	420	305	280	320
9	260	320	698	360	340	2940	655	571	408	305	275	310
10	270	300	592	355	627	1880	641	487	396	300	275	305
11	260	295	606	402	634	1460	627	474	390	300	275	300
12	290	290	578	599	810	1310	606	468	378	295	275	295
13	378	285	571	501	698	1190	592	487	372	295	275	295
14	384	305	543	508	550	984	529	480	366	295	275	290
15	378	345	786	754	480	810	543	474	360	295	275	290
16	438	613	993	882	474	730	522	456	355	295	270	366
17	438	1230	1060	1870	599	648	494	384	350	295	270	480
18	355	1210	1000	3580	730	578	462	345	350	290	270	487
19	256	778	914	2510	578	515	414	345	350	290	270	620
20	251	501	754	1210	606	494	402	345	350	285	270	770
21	270	456	592	770	738	529	408	366	350	285	270	826
22	265	420	536	706	1110	550	450	350	345	285	270	778
23	320	390	487	662	794	641	474	350	340	285	295	870
24	345	408	462	641	636	641	468	350	335	285	325	1010
25	494	438	565	571	585	606	468	350	335	285	480	1130
26	569	402	1670	432	550	714	648	384	330	285	414	936
27	778	384	1710	408	690	858	698	501	325	285	335	771
28	746	372	2380	396	922	738	522	762	320	285	360	704
29	599	366	2020	384	---	669	543	571	320	285	366	655
30	444	360	1350	378	---	620	564	487	315	285	355	540
31	802	---	746	676	---	578	---	848	---	280	325	---
TOTAL	12538	14422	24520	23642	16995	31618	15672	17096	15122	9155	9305	15889
MEAN	404	481	791	763	607	1020	522	551	504	295	300	530
MAX	802	1230	2380	3580	1110	3150	698	1310	1480	315	480	1130
MIN	251	285	290	355	340	494	402	345	315	280	270	290
AC-FT	24870	28610	48640	46890	33710	62710	31090	33910	29990	18160	18460	31520
†	-10,684	-1,610	+925	-433	+17,846	+4,542	+5,833	+4,811	-601	-7,750	-6,331	-6,781
MEAN‡	231	454	806	755	929	1,090	621	630	494	169	197	416
CFSM‡	3.12	6.13	10.9	10.2	12.5	14.7	8.38	8.50	6.67	2.28	2.66	5.61
IN.‡	3.59	6.83	12.54	11.75	13.04	17.01	9.34	9.80	7.44	2.63	3.07	6.26
AC-FT‡	14,190	27,000	49,560	46,460	51,560	67,250	36,920	38,720	29,390	10,410	12,130	24,740

CAL YR 1976: TOTAL 243,894 MEAN 666 MAX 4,920 MIN 251 AC-FT 483,800
DO.....: MEAN‡ 667 CFSM‡ 9.00 IN.‡ 122.45 AC-FT‡ 484,000
WTR YR 1977: TOTAL 205,974 MEAN 564 MAX 3,580 MIN 251 AC-FT 408,500
DO.....: MEAN‡ 564 CFSM‡ 7.61 IN.‡ 103.30 AC-FT‡ 408,300

† Change in contents, in acre-feet, in Wynoochee Lake, furnished by Corps of Engineers.
‡ Adjusted for change in contents in Wynoochee Lake.

12036650 ANDERSON CREEK NEAR MONTESANO, WA

LOCATION.--Lat 47°07'02", long 123°39'17", in SE¼NE¼ sec.22, T.19 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 70 ft (21 m) upstream from Wynoochee Valley road bridge, 3.1 mi (5.0 km) upstream from Helm Creek, 9.6 mi (15.4 km) northwest of Montesano, and 1 mi (1.6 km) upstream from mouth.

DRAINAGE AREA.--2.72 mi² (7.04 km²).

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 150 ft (46 m), from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--5 years, 14.1 ft³/s (0.399 m³/s), 70.40 in/yr (1,788 mm/yr), 10,220 acre-ft/yr (12.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 299 ft³/s (8.47 m³/s) Dec. 26, 1975, gage height, 8.46 ft (2.579 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1730	*106	3.00	*5.93	1.807

Minimum discharge, no flow Aug. 8, 11-22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.75	9.8	4.5	11	12	28	13	3.3	17	1.0	.21	4.5
2	.84	6.3	4.3	10	10	27	11	4.3	16	1.0	.10	7.8
3	1.0	4.8	4.0	8.7	9.8	27	9.4	7.8	14	1.2	.07	15
4	.69	3.8	3.8	7.8	9.0	24	8.4	7.2	14	1.3	.07	16
5	.63	3.3	3.5	6.9	8.4	20	7.8	6.9	11	1.2	.08	13
6	.63	3.3	3.8	6.3	7.5	21	6.9	6.6	9.4	1.2	.14	10
7	.84	2.8	4.8	5.8	6.9	71	6.0	5.8	8.4	.93	.09	7.8
8	1.0	3.0	11	5.3	6.0	73	6.0	5.5	7.5	.84	.00	6.0
9	1.2	2.8	9.8	4.8	5.8	59	6.6	5.0	6.6	.84	.07	5.0
10	1.2	2.4	9.0	4.5	14	37	5.8	4.5	5.5	.75	.04	4.3
11	.84	2.2	8.4	6.9	16	30	5.5	4.3	4.8	.84	.00	3.5
12	.63	2.0	7.8	7.2	26	25	5.0	3.8	4.3	.84	.00	3.0
13	.58	1.8	7.8	7.8	26	21	5.5	3.8	4.0	.75	.00	2.4
14	.53	2.6	7.2	8.4	22	19	5.0	3.8	3.5	.58	.00	2.2
15	.53	4.8	14	13	18	17	6.6	4.0	3.5	.53	.00	2.1
16	.53	9.4	14	20	15	15	6.3	3.8	3.0	.58	.00	2.1
17	.52	18	14	49	13	13	5.8	3.3	2.4	.63	.00	2.1
18	.51	17	13	61	11	12	5.5	3.0	2.1	.53	.00	2.8
19	.50	14	12	40	9.0	11	5.3	2.4	2.1	.48	.00	7.2
20	.50	11	11	28	11	10	5.0	2.2	2.1	.44	.00	6.9
21	.50	9.8	9.8	21	13	10	5.0	2.4	2.2	.44	.00	6.9
22	.50	8.4	9.4	17	18	10	4.8	2.2	2.2	.40	.00	6.0
23	1.1	7.5	10	13	18	12	4.3	2.1	1.8	.40	.10	7.2
24	2.6	8.1	8.7	11	15	15	4.0	2.1	1.5	.36	2.1	7.2
25	5.5	8.4	14	9.0	19	16	3.8	2.0	1.5	.32	13	12
26	2.0	7.2	53	7.8	21	19	5.8	3.5	1.3	.36	6.9	11
27	1.5	6.6	36	6.9	26	28	4.5	5.3	1.3	.40	2.4	9.4
28	1.3	6.0	26	6.0	29	29	4.0	21	1.2	.40	4.0	8.4
29	1.2	5.5	20	5.3	---	24	3.8	16	1.1	.40	6.9	7.8
30	1.1	5.0	16	4.8	---	20	3.5	13	1.1	.36	12	6.6
31	16	---	13	11	---	17	---	15	---	.32	6.9	---
TOTAL	47.75	197.6	383.6	425.2	415.4	760	179.9	175.9	156.4	20.62	55.17	206.2
MEAN	1.54	6.59	12.4	13.7	14.8	24.5	6.00	5.67	5.21	.67	1.78	6.87
MAX	16	18	53	61	29	73	13	21	17	1.3	13	16
MIN	.50	1.8	3.5	4.5	5.8	10	3.5	2.0	1.1	.32	.00	2.1
CFSM	.57	2.42	4.56	5.04	5.44	9.01	2.21	2.09	1.92	.25	.65	2.53
IN.	.65	2.70	5.24	5.81	5.68	10.39	2.46	2.40	2.14	.28	.75	2.82
AC-FT	95	392	761	843	824	1510	357	349	310	41	109	409

CAL YR 1976 TOTAL 3507.13 MEAN 9.58 MAX 162 MIN .40 CFSM 3.52 IN 47.95 AC-FT 6960
WTR YR 1977 TOTAL 3023.74 MEAN 8.28 MAX 73 MIN .00 CFSM 3.04 IN 41.34 AC-FT 6000

12036800 WYNOOCHEE RIVER BELOW HELM CREEK NEAR MONTESANO, WA

LOCATION.--Lat 47°04'44", long 123°41'57", in NE¼NE¼ sec.5, T.18 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, at logging road bridge, 1.1 mi (1.8 km) downstream from Helm Creek, 9 mi (14.5 km) northwest of Montesano at mile 13.7 (22.0 km).

DRAINAGE AREA.--133 mi^2 (344 km^2).

PERIOD OF RECORD.--Water years 1959-70, 1973-74, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, specific conductance, and coliform data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L)
OCT												
04...	0920	540	65	7.6	10.8	--	2	10.6	.00	.02	.01	.00
18...	0950	510	67	7.5	9.2	4	7	10.7	.00	.02	.01	.00
NOV												
01...	1010	1010	60	7.4	9.2	25	4	11.0	.36	.04	.02	.00
15...	1130	490	66	7.5	9.4	65	65	11.5	.07	.03	.00	.00
DEC												
06...	1000	440	70	7.4	5.9	4	4	12.2	.18	.02	.00	.00
13...	1045	780	64	7.4	7.7	13	4	11.9	.26	.02	.00	.00
JAN												
03...	0950	940	66	7.4	4.8	13	2	12.2	.32	.03	.01	.00
17...	1050	2150	60	7.0	6.9	33	15	11.8	.41	.06	.04	.00
FEB												
07...	1225	620	64	7.4	6.1	8	1	11.8	.27	.01	.01	.00
14...	1100	1080	56	7.3	6.8	8	3	12.3	.32	.05	.01	.00
MAR												
07...	1100	3700	45	7.0	6.3	38	25	11.7	.33	.05	.08	.00
21...	1110	820	60	7.4	7.9	13	2	11.9	.26	.04	.01	.00
APR												
04...	1105	780	60	7.0	9.3	4	1	11.4	.22	.02	.01	.00
18...	1110	660	60	7.4	9.0	13	2	12.0	.15	.05	.00	.00
MAY												
02...	1030	680	61	7.0	10.8	4	1	10.7	.11	.01	.00	.00
16...	1105	600	60	6.9	10.1	17	1	11.3	.10	.04	.01	.00
JUN												
06...	1110	1180	45	7.6	14.9	8	3	11.4	.13	.04	.02	.00
20...	1145	420	64	7.4	13.9	8	2	10.7	.06	.05	.01	.00
JUL												
11...	1020	360	66	7.6	15.5	8	1	9.7	.24	.23	.07	.00
25...	1145	325	67	7.3	17.0	8	5	9.2	.08	.03	.00	.00
AUG												
02...	0945	310	62	7.4	18.5	--	1	8.9	.05	.03	.01	.00
08...	1040	305	72	7.5	17.4	8	1	9.9	.04	.02	.03	.00
22...	1110	280	72	7.2	16.5	8	1	10.1	.01	.02	.00	.00
SEP												
12...	1115	360	69	7.4	15.3	4	1	10.3	.04	.02	.00	.00
26...	1115	1250	63	6.7	11.6	21	4	11.1	.16	.03	.01	.00

12036800 WYNOOCHEE RIVER BELOW HELM CREEK NEAR MONTESANO, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
02...	0945	310	62	7.4	18.5	1	8.9	93	100	33	31
02...	1220	308	70	7.3	20.1	--	8.9	97	--	--	--
02...	1530	305	58	7.1	22.7	1	8.7	99	19	<2	--
02...	1805	302	60	7.1	22.9	--	8.4	96	--	--	--
02...	2100	299	61	7.0	21.6	1	8.1	91	100	18	--
03...	0030	295	66	6.9	20.1	--	8.1	88	--	--	--
03...	0305	293	66	6.8	19.5	--	8.1	87	--	--	--
03...	0625	290	66	7.0	18.8	--	8.2	87	--	--	--

DATE	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
02...	6	8.3	2.5	2.0	.3	31	0	25	2.0	6.3
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	27	0	22	3.4	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
02...	2.0	.0	9.0	46	4	.05	.03	.12	.01	.00
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	4	.04	.05	.13	.01	.00
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA

LOCATION.--Lat 47°00'42", long 123°39'15", in SE¼SE¼ sec.27, T.18 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on left bank 2,000 ft (610 m) upstream from Black Creek, 3.5 mi (5.6 km) northwest of Montesano, and at mile 5.9 (9.5 km).

DRAINAGE AREA.--155 mi² (401 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records good. City of Aberdeen diverted about 111 ft³/s (3.14 m³/s) for municipal supply at intake 2.2 mi (3.5 km) upstream. Other small diversions for irrigation and domestic use. Since August 1972, flow regulated by Wynoochee Dam, 45.7 mi (73.5 km) upstream, for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction.

AVERAGE DISCHARGE.--21 years, 1,311 ft³/s (37.13 m³/s) 949,800 acre-ft/yr (1,170 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,500 ft³/s (722 m³/s) Jan. 19, 1968; maximum gage height, 20.54 ft (6.261 m) Dec. 10, 1956; minimum discharge, 3.0 ft³/s (0.085 m³/s) part or all of each day Aug. 26-30, 1967, gage height, 2.86 ft (0.872 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,900 ft³/s (252 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0200	*7,340	208	*10.10	3.078

Minimum discharge, 142 ft³/s (4.02 m³/s) Oct. 23, minimum gage height, 3.04 ft (0.927 m) Aug. 17, 18, 19, 20, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	1010	380	987	1400	1820	889	608	1770	276	177	348
2	272	910	372	945	1030	1660	798	638	1740	276	177	364
3	356	710	332	903	741	1700	740	987	1280	296	180	590
4	352	548	300	692	633	1460	692	1680	1350	312	180	614
5	304	440	288	608	597	1260	656	1290	1330	316	183	644
6	288	376	288	515	558	1290	626	931	1180	328	180	515
7	232	352	336	480	526	4190	596	812	938	300	177	440
8	170	340	525	450	500	6230	596	777	662	292	180	376
9	170	316	952	430	470	6300	728	746	578	288	177	340
10	183	288	752	415	793	4020	777	632	525	260	170	316
11	187	272	710	475	1110	2830	764	578	495	256	167	292
12	177	260	686	692	1410	2420	722	560	475	253	164	280
13	236	260	662	746	1490	1980	728	560	455	242	164	264
14	288	260	632	668	1130	1760	668	572	435	239	164	256
15	284	340	812	945	926	1400	686	578	420	235	164	249
16	284	465	1190	1270	840	1240	668	566	390	232	160	249
17	332	1130	1270	2530	777	1050	620	510	376	239	157	376
18	328	1760	1310	5510	1100	948	602	425	376	225	157	445
19	222	1240	1160	4890	934	816	520	390	372	221	160	566
20	157	826	1050	2490	873	744	485	372	368	214	160	758
21	148	656	777	1650	1070	769	480	400	372	214	160	903
22	167	590	710	1260	1680	769	500	380	376	207	160	840
23	170	505	692	1070	1520	906	536	368	352	204	204	847
24	236	495	632	959	1170	1030	525	360	328	204	280	1040
25	380	590	752	875	1100	959	520	360	320	207	662	1320
26	460	520	2720	704	1140	1090	650	435	308	207	692	1270
27	608	480	2700	608	1360	1680	861	485	300	211	485	1000
28	692	470	3190	566	1580	1590	656	1190	292	204	380	875
29	656	460	2780	530	---	1320	584	1030	288	200	455	840
30	455	410	2160	500	---	1130	608	805	280	190	536	698
31	782	---	1190	650	---	1000	---	868	---	187	415	---
TOTAL	9750	17279	32310	36013	28450	57361	19481	20893	18731	7535	7747	17915
MEAN	315	576	1042	1162	1016	1850	649	674	624	243	250	597
MAX	782	1760	3190	5510	1680	6300	889	1680	1770	328	692	1320
MIN	148	260	288	415	470	744	480	360	280	187	157	249
AC-FT	19340	34270	64090	71430	56450	113800	38640	41440	37150	14950	15370	35530

CAL YR 1976 TOTAL 358200 MEAN 979 MAX 10500 MIN 148 AC-FT 710500
WTR YR 1977 TOTAL 273473 MEAN 749 MAX 6300 MIN 148 AC-FT 542400

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-65, 1970 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--No record Dec. 17 to Jan. 31.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C Aug. 10, 1971; minimum, 1.0°C Jan. 9, 10, 1973, Jan. 7-9, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 22.0°C Aug. 12; minimum recorded, 4.5°C Nov. 28, 29, 30, Dec. 1, 2, 3.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.0	13.5	14.5	10.5	10.0	10.0	4.5	4.5	4.5			
2	14.5	13.0	13.5	10.0	10.0	10.0	4.5	4.5	4.5			
3	13.0	12.0	12.0	10.0	9.0	9.5	5.0	4.5	4.5			
4	13.0	12.0	12.0	9.5	9.0	9.0	5.0	5.0	5.0			
5	14.0	13.0	13.5	9.5	9.0	9.0	5.5	5.0	5.5			
6	13.5	13.0	13.5	9.5	9.5	9.5	5.5	5.5	5.5			
7	14.5	13.5	14.0	9.5	9.0	9.0	6.5	5.5	6.0			
8	14.5	14.0	14.5	10.0	9.0	9.5	6.5	6.5	6.5			
9	14.5	14.0	14.5	10.0	10.0	10.0	6.5	5.5	6.0			
10	14.5	14.5	14.5	10.0	10.0	10.0	6.5	6.0	6.5			
11	14.5	14.5	14.5	10.0	9.5	10.0	6.5	6.5	6.5			
12	14.5	14.0	14.5	9.5	9.0	9.0	6.5	6.5	6.5			
13	14.5	13.5	14.0	9.0	8.5	9.0	7.0	6.5	6.5			
14	14.0	13.5	13.5	9.0	8.5	9.0	7.0	7.0	7.0			
15	14.0	13.0	13.5	9.0	9.0	9.0	8.0	7.0	8.0			
16	13.0	12.0	12.0	9.5	9.0	9.0	8.5	8.0	8.0			
17	12.0	11.5	12.0	9.5	9.0	9.0	---	---	---			
18	11.5	11.0	11.0	9.0	8.0	8.5	---	---	---			
19	11.0	10.5	11.0	8.5	8.5	8.5	---	---	---			
20	10.5	9.5	10.0	8.5	8.0	8.0	---	---	---			
21	10.5	9.5	10.0	8.5	7.0	8.0	---	---	---			
22	10.5	10.0	10.0	8.0	8.0	8.0	---	---	---			
23	10.5	10.5	10.5	8.0	7.0	8.0	---	---	---			
24	10.5	10.5	10.5	8.0	8.0	8.0	---	---	---			
25	10.5	10.5	10.5	8.0	7.0	8.0	---	---	---			
26	10.5	10.5	10.5	7.0	5.5	6.5	---	---	---			
27	10.5	10.5	10.5	5.5	5.0	5.5	---	---	---			
28	10.5	10.5	10.5	5.0	4.5	4.5	---	---	---			
29	10.5	10.5	10.5	4.5	4.5	4.5	---	---	---			
30	10.5	10.0	10.0	4.5	4.5	4.5	---	---	---			
31	10.5	10.0	10.0	---	---	---	---	---	---			
MONTH	15.0	9.5	12.0	10.5	4.5	8.5	8.5	4.5	6.0			

CHEHALIS RIVER BASIN

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	6.5	6.5	6.5	7.0	6.5	6.5	8.0	8.0	8.0	12.0	11.5	12.0
2	6.5	6.5	6.5	6.5	6.5	6.5	8.0	8.0	8.0	11.5	11.0	11.0
3	6.5	6.0	6.5	6.5	6.5	6.5	9.5	8.0	9.0	11.0	10.5	11.0
4	6.5	6.0	6.5	6.5	6.5	6.5	10.0	9.0	9.5	10.5	9.0	10.0
5	6.5	6.5	6.5	6.5	6.5	6.5	10.5	9.5	10.0	10.0	9.0	9.5
6	7.0	6.5	6.5	6.5	6.5	6.5	10.5	10.0	10.0	10.5	9.5	10.0
7	7.0	6.5	6.5	6.5	6.5	6.5	10.5	10.0	10.0	11.5	10.5	11.0
8	7.0	6.5	6.5	6.5	6.5	6.5	10.0	9.5	10.0	11.5	10.5	11.0
9	7.0	7.0	7.0	6.5	6.5	6.5	10.0	9.5	10.0	12.0	10.0	11.0
10	8.0	7.0	8.0	6.5	6.5	6.5	9.5	9.0	9.0	12.0	11.0	11.5
11	8.0	7.0	8.0	6.5	6.5	6.5	9.0	8.5	9.0	11.0	10.0	10.5
12	8.0	8.0	8.0	6.5	6.5	6.5	9.0	8.5	9.0	12.0	10.5	11.0
13	8.0	8.0	8.0	6.5	6.5	6.5	9.5	9.0	9.0	11.5	11.0	11.0
14	8.0	7.0	8.0	6.5	6.5	6.5	9.0	8.5	9.0	11.5	10.5	11.0
15	7.0	7.0	7.0	6.5	6.5	6.5	9.0	8.5	9.0	11.0	10.5	11.0
16	8.0	7.0	8.0	7.0	6.5	6.5	9.0	8.5	9.0	11.0	10.0	10.5
17	8.0	8.0	8.0	7.0	6.5	6.5	9.0	8.5	9.0	10.5	10.0	10.0
18	8.0	8.0	8.0	7.0	6.5	6.5	9.5	8.5	9.0	11.0	10.0	10.5
19	8.0	8.0	8.0	7.0	7.0	7.0	9.5	8.5	9.0	13.0	10.0	11.0
20	8.0	8.0	8.0	7.0	6.5	6.5	10.0	8.5	9.0	12.0	11.5	12.0
21	8.0	8.0	8.0	8.0	6.5	7.0	10.0	9.5	10.0	13.0	11.0	12.0
22	8.0	8.0	8.0	8.0	8.0	8.0	11.0	9.5	10.0	13.0	11.0	12.0
23	8.0	6.5	7.0	8.0	8.0	8.0	12.0	11.0	11.5	12.0	11.0	11.5
24	6.5	6.5	6.5	8.0	7.0	8.0	12.0	11.0	11.5	13.5	11.0	12.0
25	6.5	6.0	6.5	7.0	6.5	6.5	11.5	11.0	11.0	11.5	11.0	11.0
26	6.0	6.0	6.0	7.0	7.0	7.0	11.5	11.0	11.0	11.5	11.0	11.0
27	7.0	6.0	6.5	7.0	6.5	6.5	11.0	10.0	10.5	11.0	10.0	10.5
28	7.0	7.0	7.0	7.0	6.5	6.5	11.5	10.5	11.0	10.5	9.5	10.0
29	---	---	---	8.0	6.5	7.0	12.0	11.0	11.5	11.5	10.0	11.0
30	---	---	---	8.0	7.0	8.0	12.0	11.0	11.5	11.0	10.5	11.0
31	---	---	---	8.0	8.0	8.0	---	---	---	10.5	10.0	10.0
MONTH	8.0	6.0	7.0	8.0	6.5	7.0	12.0	8.0	10.0	13.5	9.0	11.0

DAY	JUNE			JULY			AUGUST			SEPTEMBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	11.0	10.0	10.5	18.0	16.0	16.5	20.5	18.0	19.0	16.0	14.5	15.5
2	11.0	10.0	10.5	16.5	15.5	16.0	20.5	18.0	19.0	16.0	14.5	15.5
3	10.5	10.5	10.5	15.5	14.5	15.0	20.0	18.5	19.0	14.5	14.5	14.5
4	11.0	10.0	10.5	16.0	13.5	14.5	19.5	18.0	19.0	15.5	14.5	15.0
5	13.5	10.5	12.0	15.0	14.0	14.5	20.0	17.0	19.0	15.5	14.5	15.0
6	14.5	13.0	13.5	16.5	13.5	15.0	19.5	18.0	19.0	15.5	14.0	14.5
7	14.5	13.5	14.0	18.0	14.5	16.0	18.5	17.0	18.0	15.5	14.5	15.0
8	14.5	12.0	13.5	17.0	15.5	16.5	19.0	16.5	18.0	15.5	14.0	14.5
9	15.5	12.0	14.0	16.0	14.5	15.5	21.0	17.0	19.0	15.5	14.0	14.5
10	15.5	13.0	14.5	16.0	14.5	15.5	21.0	18.0	19.5	16.0	14.5	15.5
11	15.0	13.5	14.5	16.0	14.5	15.5	21.5	18.0	20.0	16.0	14.5	15.5
12	15.5	13.5	14.5	16.5	15.0	15.5	22.0	19.0	20.5	16.5	14.5	15.5
13	15.5	14.0	14.5	17.0	15.5	16.5	20.5	19.0	20.0	16.5	14.5	15.5
14	14.5	13.5	14.0	16.5	15.0	15.5	19.0	18.0	18.5	16.5	15.5	16.0
15	14.0	13.0	13.5	16.5	15.5	16.0	20.5	17.0	19.0	15.5	15.0	15.5
16	16.0	13.0	14.5	16.0	15.5	15.5	21.5	18.0	20.0	15.0	14.5	14.5
17	18.0	14.5	16.0	16.0	15.0	15.5	21.5	19.0	20.0	14.5	14.5	14.5
18	17.0	15.5	16.5	16.5	14.5	15.5	20.0	18.0	19.0	14.5	14.5	14.5
19	15.5	14.0	14.5	18.0	14.5	16.0	18.5	18.0	18.0	14.5	14.0	14.5
20	14.0	13.5	13.5	17.0	15.5	16.5	18.0	16.5	17.0	14.5	13.5	14.0
21	14.0	13.5	13.5	18.0	15.5	16.5	16.5	16.0	16.5	13.5	13.5	13.5
22	15.5	13.5	14.5	19.0	15.5	17.0	17.0	15.5	16.5	13.5	13.5	13.5
23	16.5	14.0	15.5	19.5	16.0	18.0	16.5	15.5	16.0	13.5	13.0	13.5
24	15.5	14.5	15.0	20.0	16.5	18.5	15.5	15.5	15.5	13.5	13.0	13.5
25	15.5	13.5	14.5	19.5	17.0	18.5	15.5	15.0	15.5	13.0	13.0	13.0
26	16.5	13.5	15.0	18.0	16.0	16.5	16.5	14.5	15.5	13.0	11.5	12.0
27	16.5	15.0	15.5	17.0	16.0	16.5	15.5	15.0	15.5	12.0	11.5	12.0
28	16.5	15.0	15.5	17.0	16.0	16.5	15.5	15.0	15.5	12.0	12.0	12.0
29	16.5	14.5	15.5	18.5	16.0	17.0	15.5	14.5	15.0	12.0	12.0	12.0
30	18.5	14.5	16.5	20.0	16.0	18.0	14.5	14.0	14.5	12.0	12.0	12.0
31	---	---	---	20.5	18.0	19.0	16.0	14.0	15.0	---	---	---
MONTH	18.5	10.0	14.0	20.5	13.5	16.5	22.0	14.0	18.0	16.5	11.5	14.0
YEAR	22.0	4.5	11.5									

12036005 WISHKAH RIVER ABOVE EAST FORK NEAR ABERDEEN, WA

LOCATION.--Lat 47°04'20", long 123°46'09", in NE¼SW¼ sec.2, T.18 N., R.9 W., Grays Harbor County, Hydrologic Unit 17100104, at Wishkah Road crossing, 0.1 mi (0.2 km) upstream from East Fork, 7.5 mi (12.1 km) north of Aberdeen and at mile 12.3 (19.8 km).

DRAINAGE AREA.--59.9 mi² (155.1 km²).

PERIOD OF RECORD.--Water years 1963-70, 1973-74, October 1976 to September 1977 (discontinued).

REMARKS.--Records prior to October 1972 published as 12038100, "near Wishkah".

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, specific conductance, and coliform data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
04...	0945	43	85	7.3	10.0	--	2	9.8	.01	.03	.02	.00
18...	1020	58	89	7.5	7.7	42	6	10.6	.00	.03	.03	.01
NOV												
01...	1035	420	75	7.2	9.3	80	4	10.3	1.2	.06	.04	.00
15...	1200	195	79	7.3	8.8	95	30	10.4	.16	.04	.02	.00
DEC												
06...	1030	96	80	7.3	5.5	13	2	11.9	.24	.03	.01	.00
13...	1105	220	64	7.3	7.7	20	3	11.3	.43	.03	.01	.00
JAN												
03...	1015	262	70	7.3	4.5	20	2	12.1	.46	.04	.01	.00
17...	1120	1700	51	6.8	7.5	50	15	11.5	.75	.09	.07	.00
FEB												
07...	1300	230	69	7.3	7.0	17	2	11.5	.31	.03	.01	.00
14...	1125	402	57	7.2	7.1	13	3	11.8	.40	.04	.02	.01
MAR												
07...	1128	2600	46	6.8	6.9	65	30	11.2	.95	.06	.11	.00
21...	1130	370	96	7.3	7.7	17	2	11.6	.20	.05	.02	.01
APR												
04...	1135	273	66	7.2	9.5	13	2	11.2	.22	.02	.01	.01
18...	1150	215	65	7.5	8.7	21	2	11.7	.19	.00	.01	.01
MAY												
02...	1050	148	70	6.9	12.1	13	2	9.9	.10	.02	.02	.01
16...	1135	190	65	6.8	9.8	38	2	10.9	.13	.05	.02	.00
JUN												
06...	1220	285	80	7.4	15.7	17	2	11.2	.27	.05	.02	.00
20...	1210	121	72	7.4	12.5	21	3	10.5	.00	.02	.02	.01
JUL												
11...	1055	43	79	7.5	13.6	21	2	9.7	.07	.06	.03	.00
25...	1215	62	88	7.3	15.4	21	4	9.4	.09	.05	.02	.00
AUG												
02...	1015	59	65	7.3	16.8	--	2	8.9	.12	.08	.02	.01
08...	1115	55	90	7.6	14.8	6	1	10.1	.05	.04	.03	.00
22...	1150	51	95	7.2	14.6	21	1	10.3	.04	.03	.02	.00
SEP												
12...	1135	89	79	7.2	13.0	33	2	10.4	.18	.04	.02	.01
26...	1150	320	66	6.6	11.3	25	2	10.6	.54	.04	.01	.00

12038005 WISHKAH RIVER ABOVE EAST FORK NEAR ABERDEEN, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./ 100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
02...	1015	58	65	7.3	16.8	2	8.9	90	67	60	34
02...	1245	59	75	7.2	18.1	--	9.2	96	--	--	--
02...	1603	58	73	7.0	19.5	1	9.3	100	200	100	--
02...	1825	58	73	7.0	19.2	--	9.0	96	--	--	--
02...	2215	57	79	6.9	18.2	1	8.3	87	--	--	--
03...	0054	57	83	6.9	17.8	--	8.1	84	--	--	--
03...	0325	56	78	6.8	17.3	--	8.0	82	--	--	--
03...	0755	56	82	6.8	16.6	--	8.1	83	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
02...	7	8.3	3.2	3.9	.6	33	0	27	2.6	6.5
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	33	0	27	5.3	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
02...	6.2	.0	18	63	6	.12	.08	.19	.02	.01
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	48	.17	.06	.16	.02	.01
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--

12039000 HUMPTULIPS RIVER NEAR HUMPTULIPS, WA

LOCATION.--Lat 47°13'45", long 123°56'23", in NE¼NE¼ sec.17, T.20 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100105, on right bank 1.0 mi (1.6 km) southeast of Humptulips, 2.3 mi (3.7 km) upstream from Stevens Creek, 3.5 mi (5.7 km) downstream from confluence of East and West Forks, and at mile 24.8 (39.9 km).

DRAINAGE AREA.--130 mi² (337 km²).

PERIOD OF RECORD.-- May 1933 to January 1935, July 1942 to current year. Water temperatures November 1969 to October 1970. Chemical analyses, July 1959 to September 1970, October 1971 to September 1974, collected at site 1.2 mi (1.9 km) downstream from gage.

REVISED RECORDS.--WSP 1216: 1934-35, 1943-46, 1947(M), 1949(M). WSP 1246: Drainage area. WSP 1396: 1946(M), 1954(P). WSP 1932: 1960(P).

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (37 m), from topographic map. Prior to Jan. 14, 1935, and Mar. 1, 1950, to Jan. 16, 1953, water-stage recorder and July 1, 1942, to Feb. 28, 1950, and Jan. 17, 1953, to Sept. 30, 1959, nonrecording gage; all at sites 400 ft (122 m) downstream at different datums.

REMARKS.--Records excellent. No diversion or regulation above station.

AVERAGE DISCHARGE.--36 years (water years 1934, 1943-77), 1,347 ft³/s (38.15 m³/s), 140.71 in/yr (3,574 mm/yr), 975,900 acre-ft/yr (1,200 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft³/s (935 m³/s) Jan. 22, 1935, gage height, 12.7 ft (3.87 m), datum then in use, from flood marks, from rating curve extended above 16,500 ft³/s (467 m³/s); maximum gage height, 13.03 ft (3.972 m) Jan. 19, 1968; minimum discharge observed, 82 ft³/s (2.32 m³/s) Sept. 11, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10,000 ft³/s (283 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1900	*9,560	271	*7.92	2.414

Minimum discharge, 138 ft³/s (3.91 m³/s) part or all of each day Aug. 16-22, gage height, 1.13 ft (0.344 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	177	1420	405	946	1360	2160	1090	612	1720	388	161	426
2	196	924	467	934	1030	1850	996	682	1370	295	158	438
3	221	716	441	831	906	1780	922	1530	1170	295	158	752
4	191	596	420	752	843	1520	890	1370	1560	295	158	843
5	186	520	398	694	794	1350	906	1190	1490	295	155	890
6	180	465	398	643	738	1930	962	1080	1220	285	155	668
7	173	431	604	603	689	6070	962	874	1080	267	155	540
8	173	400	1640	563	647	6000	986	801	954	258	152	460
9	201	375	1520	533	633	4970	1110	738	858	249	152	414
10	254	351	1090	506	1570	3080	1030	689	780	241	150	375
11	254	332	1050	611	1950	2350	970	654	724	254	148	345
12	221	314	961	1260	2630	2120	874	598	675	249	146	320
13	205	299	901	1090	2200	1720	906	654	633	233	144	305
14	196	317	818	913	1500	1530	822	710	598	229	142	285
15	187	600	1290	1260	1290	1380	850	717	564	221	140	272
16	180	1330	1450	1980	1220	1240	829	696	534	221	138	272
17	173	2540	1630	3540	1510	1120	773	626	510	254	138	267
18	170	1080	1540	7230	2390	1040	738	591	480	221	138	300
19	167	1260	1220	3600	1640	970	682	552	462	213	138	710
20	164	1010	1050	2270	1580	898	647	534	444	205	138	1400
21	162	885	930	1710	2060	1080	619	682	444	201	138	1170
22	160	776	840	1400	3330	1070	731	654	462	194	138	829
23	158	689	819	1210	2380	1470	717	584	408	191	188	745
24	206	691	760	1070	1750	1600	710	564	385	191	305	801
25	983	969	981	970	1620	1380	724	540	375	184	954	1350
26	939	775	5370	882	1520	1520	938	888	360	183	1020	1070
27	577	683	3560	815	1980	2400	850	1030	345	180	540	843
28	508	618	2030	759	2330	1900	731	2120	330	179	550	731
29	457	566	1530	710	---	1600	682	1620	320	176	724	647
30	396	529	1250	660	---	1350	640	1260	310	172	682	564
31	1620	---	1070	1100	---	1200	---	1470	---	161	522	---
TOTAL	10025	23187	38404	41653	44050	61648	25293	27150	21565	7090	8733	19060
MEAN	323	773	1239	1344	1573	1989	843	876	719	229	282	635
MAX	1620	2540	5370	7230	3330	6070	1110	2120	1720	388	1020	1400
MIN	158	299	398	506	633	898	619	534	310	161	138	267
CFSM	2.49	5.95	9.53	10.3	12.1	15.3	6.49	6.74	5.53	1.76	2.17	4.89
IN.	2.87	6.63	10.99	11.92	12.60	17.64	7.24	7.77	6.17	2.03	2.50	5.45
AC-FT	19880	45990	76170	82620	87370	122300	50170	53850	42770	14060	17320	37770

CAL YR 1976 TOTAL 372575 MEAN 1018 MAX 10000 MIN 158 CFSM 7.83 IN 106.61 AC-FT 739000
WTR YR 1977 TOTAL 327030 MEAN 896 MAX 7230 MIN 138 CFSM 6.91 IN 93.81 AC-FT 650300

MOCLIPS RIVER BASIN

12039220 MOCLIPS RIVER AT MOCLIPS, WA

LOCATION.--Lat 47°14'32", long 124°11'37", in NW¼NW¼ sec.9, T.20 N., R.12 W., Grays Harbor County, Hydrologic Unit 17100102, on right bank at old road crossing, 1.0 mi (1.6 km) northeast of Moclips and 1.6 mi (2.6 km) upstream from mouth.

DRAINAGE AREA.--35.0 mi² (90.6 km²).

PERIOD OF RECORD.--December 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 25 ft (7.6 m), from topographic map.

REMARKS.--Records good except those above 2,000 ft³/s (56.6 m³/s) and those for period of no gage-height record, Jan. 22 to Feb. 22, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,260 ft³/s (121 m³/s) Dec. 26, 1975, gage height, 12.40 ft (3.780 m) from rating curve extended above 1,800 ft³/s (51.0 m³/s) on basis of velocity-area study; minimum, 7.8 ft³/s (0.22 m³/s), Aug. 5, 6, 7, 1975, gage height, 1.46 ft (0.445 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1000	*2,590	73.3	*9.31	2.838

Minimum discharge, 8.1 ft³/s (0.23 m³/s) part or all of each day July 31 to Aug. 4, gage height, 1.68 ft (0.512 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	373	51	92	430	499	102	40	205	20	8.6	78
2	18	171	47	120	240	409	97	42	107	20	8.1	92
3	19	100	46	144	130	571	75	221	132	20	8.1	283
4	20	75	45	105	115	276	60	237	384	20	8.6	202
5	19	61	42	84	120	168	61	150	313	20	8.6	160
6	18	56	42	72	100	900	56	100	140	18	9.2	100
7	17	49	87	65	85	1350	55	76	189	18	9.9	66
8	16	47	191	59	75	1050	70	66	88	18	11	50
9	19	44	209	56	70	570	109	57	90	18	11	41
10	48	39	136	50	450	300	109	50	61	17	11	36
11	61	36	111	72	350	210	107	65	56	20	11	30
12	39	34	92	109	600	265	82	66	69	18	11	27
13	30	32	90	198	400	189	118	72	65	17	12	25
14	26	33	88	172	230	215	107	114	62	17	13	22
15	21	107	162	397	120	232	146	98	60	15	14	22
16	19	260	188	487	150	164	156	102	36	15	15	20
17	17	464	233	1680	320	126	102	78	34	19	18	21
18	16	370	240	2120	550	113	82	81	31	18	25	27
19	16	213	158	729	256	104	72	91	29	16	31	120
20	15	176	116	288	300	92	66	68	28	15	34	232
21	14	128	107	170	390	102	62	92	31	14	38	196
22	14	110	95	130	407	110	130	89	51	13	44	113
23	14	93	134	100	200	200	100	62	45	12	61	105
24	19	84	124	88	160	200	70	51	38	11	81	120
25	116	151	179	89	240	164	59	69	38	11	191	418
26	143	110	1390	76	397	230	69	150	31	9.9	237	316
27	78	85	708	70	439	380	73	227	28	9.9	122	150
28	71	71	277	66	454	280	59	502	25	9.2	122	126
29	75	62	166	62	---	178	49	304	22	9.9	146	130
30	54	58	140	60	---	120	44	160	22	9.2	180	120
31	384	---	109	470	---	109	---	215	---	8.6	114	---
TOTAL	1452	3704	5799	8548	7960	9898	2542	3660	2495	476.7	1614.1	3470
MEAN	46.8	123	187	276	284	319	84.7	118	83.2	15.4	52.1	116
MAX	384	464	1390	2120	600	1350	156	502	384	20	237	418
MIN	14	32	42	50	70	92	44	40	22	8.6	8.1	20
CFSM	1.34	3.51	5.34	7.89	8.11	9.11	2.42	3.37	2.38	.44	1.49	3.31
IN.	1.54	3.94	6.16	9.09	8.44	10.52	2.70	3.90	2.65	.51	1.72	3.69
AC-FT	2880	7350	11500	16950	15790	19630	5040	7260	4950	946	3200	6880

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CAL YR 1976   TOTAL   57985.0   MEAN 158   MAX  2400   MIN 13    CFSM 4.51   IN 61.63   AC-FT  115000
WTR YR 1977   TOTAL   51607.8   MEAN 141   MAX  2120   MIN  8.1  CFSM 4.03   IN 54.85   AC-FT  102400
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12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'46", long 123°37'23", in SW¼ sec.6, T.24 N., R.7 W., Jefferson County, Hydrologic Unit 17100102, Olympic National Park, on right bank 15.5 mi (24.9 km) northeast of Amanda Park and at mile 5.2 (8.4 km).

DRAINAGE AREA.--74.1 mi² (191.9 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--November 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 620 ft (189 m), from topographic map.

REMARKS.--Water-discharge records good except those above 6,000 ft³/s (170 m³/s) which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years, 882 ft³/s (24.98 m³/s), 161.64 in/yr (4,106 mm/yr), 639,000 acre-ft/yr (788 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,200 ft³/s (629 m³/s) Dec. 3, 1975, gage height, 12.59 ft (3.837 m), from rating curve extended above 4,200 ft³/s (119 m³/s); minimum, 103 ft³/s (2.92 m³/s) Oct. 3, 1965, gage height, 1.93 ft (0.588 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*) from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 26	0700	*9,080	257	*8.81	2.685	Jan. 18	0600	6,980	198	7.99	2.435

Minimum discharge, 128 ft³/s (3.62 m³/s) Oct. 23, 24, gage height, 2.81 ft (0.856 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	205	566	229	445	350	632	326	1200	1460	552	245	733
2	245	368	221	424	314	566	330	1470	1810	608	245	459
3	217	311	209	380	296	504	360	1880	881	666	249	473
4	191	270	201	345	319	459	512	1090	1560	445	245	760
5	191	241	194	324	299	424	730	660	1360	424	241	404
6	187	225	205	314	296	667	1000	760	1660	386	224	304
7	184	221	424	299	276	1150	1110	768	1610	374	221	267
8	184	217	1360	281	267	1130	1070	850	1240	380	213	241
9	196	217	580	267	362	960	850	890	1030	362	206	225
10	333	201	424	253	2070	667	649	890	1030	335	202	217
11	237	191	501	309	1030	560	568	721	1040	431	199	276
12	198	184	380	459	2170	496	512	608	1040	374	202	202
13	188	177	522	314	970	424	536	703	1050	335	202	199
14	170	240	386	299	649	380	459	694	1040	330	195	192
15	161	610	1110	452	536	350	473	624	1000	335	192	188
16	155	1310	737	760	576	324	473	552	990	345	192	161
17	149	1530	1020	2500	732	309	610	528	1040	386	185	199
18	143	662	670	3740	920	299	380	568	1070	304	178	229
19	137	522	501	1120	608	290	356	624	960	281	172	1660
20	135	624	445	770	1200	276	368	730	800	276	175	1420
21	132	385	398	624	1250	314	380	1100	790	281	175	770
22	130	320	392	520	1310	350	840	840	780	276	172	452
23	128	295	404	466	850	417	950	712	703	276	271	592
24	459	494	330	424	649	386	1210	640	770	276	552	520
25	1130	487	1200	392	560	350	1200	632	676	285	1350	632
26	424	322	6120	368	520	424	1380	1060	600	281	504	459
27	275	280	1520	340	730	552	960	750	576	271	299	362
28	610	265	910	324	800	417	960	770	632	276	404	374
29	290	250	712	309	---	374	1020	703	560	271	417	345
30	233	241	504	299	---	335	1010	667	544	241	388	304
31	1480	---	504	398	---	324	---	1580	---	241	267	---
TOTAL	8889	11859	23430	18547	20919	15068	21452	26296	29501	10584	9059	13079
MEAN	287	395	756	598	747	486	715	848	983	341	292	436
MAX	1480	1530	6120	3740	2170	1150	1380	1880	1660	552	1350	1660
MIN	128	177	194	253	267	276	326	528	544	241	172	161
CFSM	3.87	5.33	10.2	8.07	10.1	6.56	9.65	11.4	13.3	4.60	3.94	5.88
IN.	4.46	5.95	11.76	9.31	10.50	7.56	10.77	13.20	14.81	5.31	4.55	6.57
AC-FT	17630	23520	46470	36790	41490	29890	42550	52160	58520	20990	17970	25940

CAL YR 1976 TOTAL 261245 MEAN 714 MAX 6120 MIN 128 CFSM 9.64 IN 131.15 AC-FT 518200
WTR YR 1977 TOTAL 208683 MEAN 572 MAX 6120 MIN 128 CFSM 7.72 IN 104.76 AC-FT 413900

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to current year.

INSTRUMENTATION.--Temperature recorder since March 1965.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 14.5°C Aug. 7, 16-18, 1965; minimum, 1.0°C Jan. 31, 1968, sometimes during period Dec. 16, 1970 to Jan. 20, 1971, Mar. 1, 2, 1971, Dec. 16, 1975, Feb. 29, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 14.0°C Aug. 12, 13; minimum, 3.0 Feb. 21, 26, Mar. 16-17, 23, 27, 28.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM, .7UM-MF (COL./100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)
OCT 20...	1130	135	[illegible]	[illegible]	5.6	12.3	12	1	7	--	43	8
NOV 17...	1200	2340	[illegible]	[illegible]	--	11.3	--	50	--	92	18	8
DEC 21...	1000	404	[illegible]	[illegible]	4.5	12.6	13	1	--	63	41	9
JAN 18...	1300	3170	[illegible]	7.2	5.0	12.4	16	<1	--	100	15	0
FEB 24...	1045	669	73	7.4	3.3	13.7	B10	5	--	10	35	7
MAR 23...	1200	417	82	[illegible]	3.8	--	B15	3	--	17	35	8
APR 20...	1000	330	84	6.9	4.5	12.0	B10	--	--	--	40	10
JUN 01...	1130	1360	49	7.2	3.5	12.3	20	4	--	3	24	6
14...	1230	866	52	6.9	7.3	11.6	67	<1	--	7	32	12
JUL 13...	1145	324	77	7.0	[illegible]	11.2	26	1	--	9	40	14
AUG 24...	1100	213	[illegible]	7.0	[illegible]	10.6	--	13	--	100	39	10
SEP 22...	1200	450	75	7.2	8.4	11.6	64	5	--	9	36	12

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)
OCT 20...	16	.7	[illegible]	[illegible]	43	35	[illegible]	12	.8	.1	4.7	43
NOV 17...	6.7	.4	.9	.2	12	10	1.2	10	.8	.0	1.8	33
DEC 21...	15	.8	1.5	.2	39	32	6.2	9.3	1.1	.1	4.7	56
JAN 18...	5.0	.5	2.7	3.3	19	16	1.9	6.2	.8	.0	2.8	45
FEB 24...	13	.5	[illegible]	.1	33	27	2.1	8.4	1.1	.0	4.6	47
MAR 23...	13	.5	[illegible]	[illegible]	32	26	4.4	11	1.6	.1	4.5	48
APR 20...	15	.6	1.6	.1	37	30	7.5	10	1.4	.0	5.1	56
JUN 01...	8.8	.4	1.4	.1	22	18	2.2	5.0	1.2	.0	3.1	28
14...	12	.5	1.4	.1	25	21	5.0	9.1	.9	.0	4.0	32
JUL 13...	15	.6	1.4	.1	32	26	5.1	11	.6	.0	4.5	47
AUG 24...	14	.9	1.0	.2	35	29	5.6	10	1.0	.1	4.6	50
SEP 22...	13	.9	1.0	.2	29	24	2.0	8.3	1.7	.0	4.6	50

B Results based upon colony counts outside the ideal range.

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	DIS-SOLVED SOLIDS (TONS PER DAY)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT												
20...	47	.06	15.7	.00	--	--	--	--	.00	--	0	.00
NOV												
17...	27	.04	204	.04	--	--	--	--	.12	--	107	1060
DEC												
21...	52	.08	61.1	.05	--	--	--	--	.00	--	2	2.2
JAN												
18...	31	.04	304	.08	--	--	--	--	.04	--	53	420
FEB												
24...	65	.06	73.6	.03	--	--	--	--	.00	--	3	5.1
MAR												
23...	60	.07	56.0	.02	--	--	--	--	.01	--	3	3.6
APR												
20...	52	.08	60.9	.02	.04	.11	.15	.17	.02	.00	1	.09
JUN												
01...	32	.04	183	.08	.05	.50	.55	.63	.24	.01	6	29
16...	49	.06	76.8	.04	.02	.11	.13	.15	.01	.00	3	7.0
JUL												
15...	49	.06	61.1	.01	.01	.06	.07	.08	.01	.00	2	1.7
AUG												
09...	58	.07	28.8	.05	.03	.08	.11	.16	.01	.00	3	1.7
SEP												
22...	65	.07	66.7	.04	.02	.25	.27	.31	.07	.00	4	6.9

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT							
20...	1130	0	0	<10	0	<10	60
JAN							
18...	1300	0	0	<10	0	40	1500
JUN							
16...	1230	0	0	<10	0	30	100

DATE	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)	CYANIDE (CN) (MG/L)
OCT							
20...	<100	0	.0	1	<10	10	.00
JAN							
18...	<100	20	.2	0	<10	70	.00
JUN							
16...	<100	0	.0	0	<10	20	--

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL FILT-RABLE RESIDUE (MG/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L)	SUS-PENDED GROSS BETA AS CS-137 (PC/L)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L)	DIS-SOLVED URANIUM (U) (UG/L)
OCT											
20...	1130	63	<1	<.6	<.6	<.6	<.6	<.6	<.6	.02	<.01

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL PCB (UG/L)	PCB IN BOTTOM MA-TERIAL (UG/KG)	POLY-CHLO-RINATED NAPH-THA-LENES (UG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MA-TERIAL (UG/KG)	TOTAL CHLOR-DANE (UG/L)	CHLOR-DANE IN BOTTOM MA-TERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MA-TERIAL (UG/KG)
JAN										
18...	1300	--	0	--	--	.0	--	0	--	.0
JUN										
16...	1231	.0	0	.00	.00	.0	.0	0	.00	.0

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL DDE (UG/L)	DDE IN BOTTOM MA-TERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MA-TERIAL (UG/KG)	TOTAL DI-ELDRIN (UG/L)	DI-ELDRIN IN BOTTOM MA-TERIAL (UG/KG)	TOTAL ENDO-SULFAN (UG/L)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MA-TERIAL (UG/KG)	TOTAL HEPTA-CHLOR (UG/L)
JAN 18...	--	.0	--	.0	--	.0	--	--	.0	--
JUN 14...	.00	.0	.00	.0	.00	.0	.00	.00	.0	.00

DATE	HEPTA-CHLOR IN BOTTOM MA-TERIAL (UG/KG)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	HEPTA-CHLOR EPOXIDE IN BOT-TOM MA-TERIAL (UG/KG)	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MA-TERIAL (UG/KG)	TOTAL TOX-APHENE (UG/L)	TOX-APHENE IN BOTTOM MA-TERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
JAN 18...	.0	--	.0	--	.0	--	0	--	--	--
JUN 14...	.0	.00	.0	.00	.0	0	0	.00	.00	.00

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	9.5	10.0	6.5	6.0	6.5	4.0	4.0	4.0	4.5	4.0	4.5
2	9.5	9.0	9.0	6.0	6.0	6.0	4.5	4.0	4.0	4.5	4.0	4.5
3	9.0	8.5	9.0	6.5	6.0	6.5	4.5	4.5	4.5	4.5	4.0	4.5
4	9.0	8.0	8.5	6.5	6.5	6.5	4.5	4.0	4.5	4.0	3.5	3.5
5	8.5	8.5	8.5	7.0	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
6	9.5	8.5	9.0	7.0	6.5	6.5	4.5	4.5	4.5	4.0	3.5	3.5
7	9.5	8.5	9.0	7.0	7.0	7.0	5.5	4.5	5.0	4.0	3.5	3.5
8	9.0	9.0	9.0	8.0	7.0	8.0	5.5	5.0	5.5	3.5	3.5	3.5
9	9.5	9.0	9.0	---	---	---	5.0	5.0	5.0	3.5	3.5	3.5
10	9.5	9.5	9.5	---	---	---	5.0	5.0	5.0	3.5	3.5	3.5
11	10.0	9.0	9.5	---	---	---	5.0	5.0	5.0	4.0	3.5	3.5
12	9.0	8.5	9.0	---	---	---	5.0	5.0	5.0	4.0	4.0	4.0
13	9.0	8.0	8.5	---	---	---	5.0	5.0	5.0	4.0	4.0	4.0
14	9.0	8.5	9.0	---	---	---	5.5	5.0	5.5	4.5	4.0	4.5
15	8.5	8.0	8.0	---	---	---	5.5	5.5	5.5	4.5	4.5	4.5
16	8.5	7.0	8.0	---	---	---	5.5	5.0	5.5	4.5	4.5	4.5
17	8.0	6.5	7.0	---	---	---	5.0	5.0	5.0	5.0	4.5	4.5
18	7.0	6.0	6.5	6.5	5.5	6.0	5.0	4.5	4.5	5.0	5.0	5.0
19	7.0	6.0	6.5	5.5	5.5	5.5	4.5	4.5	4.5	5.0	5.0	5.0
20	6.5	5.5	6.0	5.5	5.0	5.5	4.5	4.5	4.5	5.0	4.5	4.5
21	6.5	6.0	6.5	5.5	5.0	5.0	5.0	4.5	4.5	5.0	5.0	5.0
22	6.5	6.0	6.5	5.5	5.0	5.0	5.0	5.0	5.0	5.0	4.5	4.5
23	6.5	6.5	6.5	5.5	5.0	5.0	5.5	5.0	5.5	4.5	4.0	4.5
24	6.5	6.5	6.5	5.0	5.0	5.0	5.0	4.5	4.5	4.0	4.0	4.0
25	6.5	6.5	6.5	5.0	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0
26	6.5	6.5	6.5	4.5	4.0	4.0	5.5	4.5	5.0	4.0	4.0	4.0
27	6.5	6.5	6.5	4.0	3.5	4.0	5.5	5.0	5.5	4.0	3.5	3.5
28	6.5	6.5	6.5	3.5	3.5	3.5	5.0	5.0	5.0	3.5	3.5	3.5
29	6.5	6.5	6.5	4.0	3.5	3.5	5.0	5.0	5.0	3.5	3.5	3.5
30	6.5	5.5	6.0	4.0	4.0	4.0	5.0	4.5	4.5	3.5	3.5	3.5
31	6.5	6.0	6.5	---	---	---	4.5	4.5	4.5	4.0	3.5	3.5
MONTH	10.5	5.5	7.5	8.0	3.5	5.5	5.5	4.0	5.0	5.0	3.5	4.0

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	4.0	4.0	3.5	3.5	3.5	4.5	4.0	4.5	5.5	5.5	5.5
2	4.0	4.0	4.0	3.5	3.5	3.5	4.5	4.0	4.5	5.5	5.0	5.5
3	4.0	4.0	4.0	4.0	3.5	3.5	5.0	4.0	4.5	5.0	4.5	4.5
4	4.5	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.5	4.5	4.5	4.5
5	4.5	4.0	4.5	4.5	4.0	4.5	4.0	3.5	3.5	5.5	4.5	5.0
6	4.5	4.0	4.5	4.5	3.5	4.0	4.5	4.0	4.5	5.5	5.5	5.5
7	4.5	4.5	4.5	3.5	3.5	3.5	4.5	4.0	4.5	6.0	5.5	5.5
8	4.5	4.5	4.5	3.5	3.5	3.5	4.5	4.5	4.5	6.0	5.5	5.5
9	5.0	4.5	4.5	3.5	3.5	3.5	4.5	4.0	4.5	6.5	5.5	6.0
10	5.0	4.5	4.5	3.5	3.0	3.5	4.0	4.0	4.0	5.5	5.5	5.5
11	4.5	4.5	4.5	3.5	3.0	3.5	4.5	4.0	4.5	5.5	5.5	5.5
12	4.5	4.5	4.5	3.5	3.0	3.5	4.5	4.5	4.5	5.5	4.5	5.0
13	4.5	4.0	4.5	3.5	3.0	3.5	4.5	4.5	4.5	5.5	5.5	5.5
14	4.5	4.0	4.5	3.0	3.0	3.0	4.5	4.0	4.5	5.5	5.5	5.5
15	4.5	4.5	4.5	3.5	3.0	3.5	4.5	4.0	4.5	5.5	5.0	5.5
16	5.0	4.5	4.5	3.5	3.0	3.5	4.5	4.5	4.5	5.5	5.0	5.5
17	5.0	4.5	4.5	3.5	3.0	3.5	4.5	4.0	4.5	5.5	5.5	5.5
18	4.5	4.5	4.5	4.0	3.5	3.5	4.5	4.0	4.5	5.5	5.5	5.5
19	4.5	4.5	4.5	4.0	3.5	3.5	4.5	4.0	4.5	6.0	5.5	5.5
20	5.0	4.5	4.5	3.5	3.5	3.5	5.5	4.5	5.0	6.0	6.0	6.0
21	4.5	4.0	4.5	4.0	3.5	3.5	5.5	5.0	5.5	6.0	5.5	5.5
22	4.0	4.0	4.0	4.0	4.0	4.0	5.5	4.5	5.0	6.0	5.5	5.5
23	4.0	4.0	4.0	4.0	3.0	3.5	5.5	4.5	5.0	6.0	5.5	5.5
24	4.0	3.5	3.5	3.5	3.5	3.5	5.5	4.5	5.0	5.5	5.5	5.5
25	3.5	3.0	3.5	3.5	3.5	3.5	4.5	4.5	4.5	5.5	5.5	5.5
26	3.5	3.0	3.5	3.5	3.5	3.5	4.5	4.5	4.5	5.5	5.5	5.5
27	3.5	3.5	3.5	3.5	3.0	3.5	5.5	4.5	5.0	5.5	5.0	5.5
28	3.5	3.5	3.5	4.0	3.0	3.5	5.5	4.5	5.0	6.0	5.0	5.5
29	---	---	---	4.0	3.5	3.5	5.5	5.0	5.5	5.5	5.5	5.5
30	---	---	---	4.0	3.5	3.5	5.5	4.5	5.0	5.5	5.5	5.5
31	---	---	---	4.0	3.5	3.5	---	---	---	5.5	5.5	5.5
MONTH	5.0	3.0	4.0	4.5	3.0	3.5	5.5	3.5	4.5	6.5	4.5	5.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	5.5	5.5	5.5	10.5	9.5	10.0	13.0	11.0	12.0	10.5	10.0	10.0
2	6.0	5.5	5.5	10.0	9.0	9.5	13.0	11.5	12.0	10.5	10.5	10.5
3	5.5	5.5	5.5	9.0	8.5	9.0	13.5	12.0	13.0	10.5	10.5	10.5
4	5.5	5.5	5.5	8.5	8.5	8.5	13.5	12.0	13.0	11.0	10.5	11.0
5	8.0	5.5	6.5	8.5	8.0	8.0	13.5	12.0	13.0	11.0	10.5	11.0
6	8.5	6.5	8.0	9.5	8.5	9.0	13.5	11.5	12.0	10.5	10.0	10.0
7	8.5	6.0	7.0	9.5	8.5	9.0	13.5	11.5	12.0	10.5	10.0	10.0
8	7.0	6.0	6.5	10.0	9.0	9.5	13.5	11.5	12.0	10.5	9.5	10.0
9	8.0	5.5	6.5	10.0	9.0	9.5	13.5	11.5	12.0	10.5	9.5	10.0
10	8.0	6.0	6.5	9.5	8.5	9.0	13.5	11.5	12.0	11.0	10.0	10.5
11	8.0	6.5	7.0	10.0	9.5	10.0	13.5	11.5	12.0	11.0	10.0	10.5
12	8.5	6.5	8.0	10.0	9.5	10.0	14.0	12.0	13.5	11.0	10.0	10.5
13	9.0	7.0	8.0	10.0	9.5	10.0	14.0	13.0	13.5	11.0	10.5	11.0
14	9.0	7.0	8.0	11.0	9.5	10.0	13.5	12.0	13.0	11.5	11.0	11.0
15	9.0	7.0	8.0	11.0	10.0	10.5	13.5	11.5	12.0	11.0	10.5	11.0
16	9.5	7.0	8.5	11.0	10.0	10.5	13.5	12.0	13.0	10.5	10.0	10.0
17	9.5	8.0	9.0	10.5	10.0	10.0	13.5	12.0	13.0	10.0	10.0	10.0
18	9.5	8.0	9.0	10.0	9.5	10.0	13.0	12.0	12.0	10.0	10.0	10.0
19	9.0	8.0	8.5	10.5	9.5	10.0	13.0	11.5	12.0	10.0	10.0	10.0
20	8.5	8.0	8.0	11.0	9.5	10.0	13.0	11.5	12.0	10.0	9.5	10.0
21	8.5	8.0	8.0	11.0	10.0	10.5	12.0	11.5	12.0	9.5	9.0	9.0
22	9.0	8.0	8.5	11.5	10.0	11.0	11.5	11.5	11.5	9.0	8.5	9.0
23	9.5	8.0	9.0	12.0	10.5	11.0	11.5	11.0	11.0	9.0	9.0	9.0
24	9.0	8.5	9.0	11.5	10.5	11.0	11.0	10.0	10.5	9.0	9.0	9.0
25	9.5	8.0	9.0	11.5	11.0	11.0	11.0	11.0	11.0	9.0	8.5	9.0
26	9.0	8.5	9.0	11.5	11.0	11.0	11.0	11.0	11.0	9.0	8.5	9.0
27	10.0	8.5	9.0	11.5	11.0	11.0	11.0	10.5	11.0	9.0	8.5	9.0
28	10.5	9.0	10.0	11.5	10.5	11.0	11.0	10.5	11.0	9.0	8.5	9.0
29	10.0	9.0	9.5	10.5	10.0	10.0	11.0	10.5	11.0	9.0	9.0	9.0
30	10.5	9.0	10.0	11.5	10.0	11.0	10.5	10.0	10.0	9.0	9.0	9.0
31	---	---	---	13.0	10.5	11.5	10.5	10.0	10.0	---	---	---
MONTH	10.5	5.5	8.0	13.0	8.0	10.0	14.0	10.0	12.0	11.5	8.5	10.0
YEAR	14.0	3.0	6.5									

12039500 QUINAULT RIVER AT QUINAULT LAKE, WA

LOCATION.--Lat 47°27'28" long 123°53'17", in SW¼NE¼ sec.25, T.23 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at outlet of Quinault Lake, 50 ft (15 m) downstream from Olympic Highway bridge on U.S. Highway 101, 2.0 mi (3.2 km) southwest of Quinault, and at mile 33.4 (53.7 km).

DRAINAGE AREA.--264 mi² (684 km²).

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for some periods, published in WSP 1316. Chemical analyses July 1959 to June 1960, October 1962 to September 1970 (partial record station), October 1971 to September 1974.

REVISED RECORDS.--WSP 442: Drainage area. WSP 1286: 1915-16(M), 1934, 1936-39(M). WSP 1316: 1923, 1925, 1933. WSP 1635: 1917.

GAGE.--Water-stage recorder. Datum of gage is 184.60 ft (56.266 m) above mean sea level (State Highway Department bench mark). Prior to Sept. 30, 1916, nonrecording gages at sites within 4 mi (6.4 km) northeast of present site, at different datum. Oct. 1, 1916, to May 2, 1935, water-stage recorder at site 300 ft (91 m) downstream from present site at datum 0.36 ft (0.110 m) higher than present datum.

REMARKS.--Records good. Flow affected by natural storage in Quinault Lake. No diversions above station.

AVERAGE DISCHARGE.--66 years, 2,840 ft³/s (80.43 m³/s) 146.09 in/yr (3,711 mm/yr), 2,058,000 acre-ft/yr (2,540 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,200 ft³/s (1,420 m³/s) Nov. 4, 1955, gage height, 20.51 ft (6.251 m); minimum, 276 ft³/s (7.82 m³/s) Sept. 12, 1944, gage height, 1.96 ft (0.597 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of approximately 22 ft (6.7 m), present datum, discharge, 52,600 ft³/s (1,490 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	(m³/s)	Gage height (ft)	(m)
Dec. 27	0103	*11,100	314	*8.71	2.655

Minimum discharge, 438 ft³/s (12.4 m³/s) Oct. 23, 24, Aug. 23; minimum gage height, 2.23 ft (0.680 m) Oct. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	653	2560	1060	2420	1530	3390	1820	3030	3720	1330	646	1070
2	653	2270	995	2150	1470	3040	1700	4300	3310	1290	632	995
3	648	1920	946	1920	1370	2810	1820	4460	3520	1270	625	1140
4	646	1640	890	1730	1320	2520	1600	3930	3790	1220	618	1260
5	625	1440	850	1580	1280	2260	1700	3370	3840	1190	611	1400
6	604	1280	826	1460	1220	2370	1980	2870	3280	1140	604	1300
7	590	1170	898	1370	1160	4490	2400	2640	2700	1080	597	1180
8	577	1080	1400	1280	1110	6830	2830	2520	2500	1030	577	1060
9	577	1000	2160	1210	1090	7080	3090	2470	2300	995	564	970
10	618	938	2070	1140	1750	5700	2970	2350	2240	962	551	898
11	608	862	2010	1120	3100	4340	2690	2170	2250	962	531	834
12	600	834	1920	1350	3900	3710	2400	2100	2280	962	525	780
13	639	787	1820	1600	4000	3060	2260	2100	2300	938	513	735
14	618	772	1740	1560	3200	2590	2120	2060	2300	906	507	697
15	590	906	1970	1400	2700	2260	2010	1970	2250	874	501	667
16	564	1360	2500	1700	2500	2000	1940	1850	2200	866	495	646
17	544	2780	2770	2500	2800	1790	1860	1780	2100	890	489	639
18	519	3550	3000	8340	3300	1640	1770	1730	2200	882	477	653
19	501	2950	2670	7930	3600	1600	1670	1750	2180	850	465	1010
20	483	2460	2330	5390	2800	1540	1580	1990	2090	810	459	2260
21	472	2070	2070	3960	4300	1500	1510	2120	1970	780	448	2710
22	454	1800	1860	3040	5640	1480	1600	2070	1890	750	443	2400
23	443	1590	1740	2520	5240	1680	1690	1980	1800	727	477	2060
24	471	1670	1610	2150	4200	1890	2330	1920	1710	712	583	1980
25	890	1610	1670	1890	3510	1900	2810	2260	1680	697	1050	2060
26	1370	1560	6720	1700	3030	1960	3400	2500	1610	697	1540	2040
27	1320	1420	9970	1560	2900	2510	3280	2870	1520	690	1450	1840
28	1250	1300	6750	1440	3300	2640	2940	2780	1460	690	1290	1650
29	1200	1210	4750	1350	---	2440	2830	2570	1430	705	1290	1520
30	1110	1120	3640	1270	---	2200	2740	2850	1380	690	1280	1400
31	1680	---	2880	1360	---	1980	---	3840	---	667	1190	---
TOTAL	22665	47729	78575	71330	77480	87250	67340	79200	69960	28252	22020	39854
MEAN	731	1591	2535	2301	2767	2815	2245	2555	2332	911	711	1328
MAX	1680	3550	9970	8340	5640	7080	3400	4460	3840	1330	1540	2710
MIN	443	772	826	1120	1090	1480	1510	1730	1380	667	443	639
CFSM	2.77	6.03	9.60	8.72	10.5	10.7	8.50	9.68	8.83	3.45	2.69	5.03
IN.	3.19	6.73	11.07	10.05	10.92	12.29	9.49	11.16	9.86	3.98	3.10	5.62
AC-FT	44960	94670	155900	141500	153700	173100	133600	157100	138800	56040	43690	79050

CAL YR 1976 TOTAL 867651 MEAN 2371 MAX 12000 MIN 443 CFSM 8.98 IN 122.26 AC-FT 1721000
WTR YR 1977 TOTAL 691663 MEAN 1895 MAX 9970 MIN 443 CFSM 7.18 IN 97.46 AC-FT 1372000

12039520 RAFT RIVER BELOW RAINY CREEK NEAR QUEETS, WA

LOCATION.--Lat 47°27'17", long 124°18'58", in SW¼NE¼ sec.27, T.23 N., R.13 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at the mouth of Rainy Creek, 5.9 mi (9.5 km) south of Queets and at mile 1.4 (2.3 km).

DRAINAGE AREA.--76.0 mi² (196.8 km²).

PERIOD OF RECORD.--April 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 10 ft (3 m), from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft³/s (487 m³/s) Dec. 26, 1975, gage height, 16.57 ft(5.051 m) from rating extended above 5,000 ft³/s (142 m³/s); minimum, 38 ft³/s (1.08 m³/s) Aug. 22, 1977; minimum gage height, 3.12 ft (0.951 m). Aug. 6, 7, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0800	*8,760	248	*12.39	3.776

Minimum discharge, 38 ft³/s (1.08 m³/s) Aug. 22, gage height, 3.18 ft (0.969 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	835	114	205	1220	1290	259	121	806	75	51	142
2	67	343	100	269	454	795	219	130	481	75	49	255
3	78	213	105	325	283	1060	196	895	315	78	49	873
4	78	166	102	221	263	498	176	754	1420	78	49	729
5	65	138	99	180	207	344	162	529	672	75	47	476
6	62	123	105	156	227	1620	155	299	339	75	47	231
7	60	114	329	142	194	4170	148	215	243	75	47	152
8	62	114	1090	129	173	2460	190	176	197	71	45	118
9	90	111	630	123	176	1730	596	155	173	68	45	97
10	325	102	317	114	1390	687	454	139	155	66	43	85
11	257	98	273	159	801	503	397	142	142	71	43	78
12	156	87	241	700	1990	831	271	136	133	73	41	73
13	108	84	269	438	996	450	392	366	127	68	41	68
14	87	114	249	317	432	445	319	410	121	66	43	66
15	75	518	670	972	291	494	366	307	118	63	43	63
16	70	1370	735	1250	353	335	368	247	112	68	41	66
17	65	1980	1310	4050	919	267	251	190	109	103	39	66
18	62	785	740	5650	1820	251	215	162	103	88	39	94
19	60	446	379	1090	578	235	201	142	100	71	41	605
20	57	352	261	503	929	211	176	136	97	63	39	857
21	55	265	221	339	1220	271	169	366	103	61	39	565
22	55	245	198	263	1760	366	331	303	130	57	39	275
23	55	191	334	223	734	754	247	194	115	57	71	211
24	87	194	293	197	401	578	188	173	103	55	281	319
25	954	468	541	180	919	428	159	169	103	53	978	1220
26	536	261	4040	166	1030	759	187	596	97	53	770	551
27	233	184	1130	155	1170	1270	183	1070	88	53	263	271
28	334	149	482	145	1100	770	152	1940	85	55	271	379
29	325	132	392	139	---	437	136	687	80	57	428	361
30	187	123	374	136	---	303	127	357	78	55	461	208
31	1760	---	257	1330	---	259	---	503	---	53	227	---
TOTAL	6514	10215	16388	20266	22110	24851	7378	12009	6945	2079	4610	9554
MEAN	210	341	529	654	790	802	246	387	232	67.1	149	318
MAX	1760	1980	4040	5650	1990	4170	596	1940	1420	103	978	1220
MIN	55	84	99	114	173	211	127	121	78	53	39	63
CFSM	2.76	4.49	6.96	8.61	10.4	10.6	3.24	5.09	3.05	.88	1.96	4.18
IN.	3.19	5.00	8.02	9.92	10.82	12.16	3.61	5.88	3.40	1.02	2.26	4.68
AC-FT	12920	20260	32510	40200	43860	49290	14630	23820	13780	4120	9140	18950

CAL YR 1976 TOTAL 181836 MEAN 497 MAX 7980 MIN 55 CFSM 6.54 IN 89.00 AC-FT 360700
WTR YR 1977 TOTAL 142919 MEAN 392 MAX 5650 MIN 39 CFSM 5.16 IN 69.95 AC-FT 283500

12040500 QUEETS RIVER NEAR CLEARWATER, WA

LOCATION.--Lat 47°32'17", long 124°18'52", in NE¼SW¼ sec.36, T.24 N., R.13 W., Jefferson County, Hydrologic Unit 17100102, Quinault Indian Reservation, on right bank, 2.4 mi (3.9 km) downstream from mouth of Clearwater River, 0.8 mi (1.3 km) east of Queets and at mile 4.6 (7.4 km).

DRAINAGE AREA.--445 mi^2 (1,153 km^2).

PERIOD OF RECORD.--September 1930 to November 1949, water years 1950-67 (annual maximum), April 1974 to current year.

REVISED RECORDS.--WSP 1316: 1931-49(M).

GAGE.--Water-stage recorder. Datum of gage is 14.5 ft (4.42 m) above mean sea level (river-profile survey). September 15, 1930 to January 22, 1935, at datum 4.0 ft (1.22 m) higher.

REMARKS.--Record excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--22 years (water years 1931-49, 1975-77), 4,150 ft^3/s (117.5 m^3/s), 126.64 in/yr (3,217 mm/yr), 3,007,000 acre-ft (3,710 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,400 ft^3/s (3,690 m^3/s) Jan. 22, 1935, gage height, 27.0 ft (8.23 m) from flood marks, present datum; minimum, 368 ft^3/s (10.4 m^3/s) Sept. 9, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 42,000 ft^3/s (1,190 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1000	*38,000	1,080	*16.72	5.096

Minimum discharge, 573 ft^3/s (16.2 m^3/s) Oct. 23, 24; minimum gage height, 5.90 ft (1.798 m) Aug. 20-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	806	4760	1450	3000	4720	6070	2990	2510	5460	1240	762	1290
2	868	2990	1360	2410	2930	5040	2670	2750	4360	1220	762	1350
3	1050	2350	1280	2640	2420	5330	2500	6350	3570	1220	778	2770
4	836	1960	1220	2300	2420	4180	2530	4930	5350	1190	786	2910
5	764	1720	1150	2070	2300	3600	2750	4120	4520	1120	786	2610
6	756	1560	1150	1900	2020	7250	3140	3390	4040	1110	770	1900
7	724	1420	2090	1770	1860	22200	3280	2980	3860	1020	746	1580
8	740	1350	7690	1650	1730	19300	3590	2800	3350	981	722	1380
9	876	1260	5390	1550	1840	15200	5060	2610	2800	963	690	1250
10	1360	1140	3500	1450	7610	9050	4080	2560	2560	927	674	1160
11	1370	1100	3700	1550	6770	6600	3500	2500	2460	1030	666	1080
12	1090	1030	3130	3600	10600	6670	3010	2180	2350	1140	666	1020
13	920	971	3130	2690	8090	4910	3500	2540	2260	999	682	972
14	836	984	2680	2200	5020	4240	3070	2820	2160	927	674	936
15	780	1950	4480	3010	3820	3730	3060	2800	2080	909	658	891
16	732	6940	4880	3960	3750	3220	2980	2580	1980	954	658	864
17	700	11300	7270	10900	5900	2850	2660	2290	1950	1340	643	837
18	666	6400	5630	28100	9470	2700	2560	2190	1970	1080	629	1030
19	644	4300	3960	10300	5350	2530	2350	2040	1910	927	608	3220
20	624	3290	3300	6120	6370	2320	2150	2040	1730	864	594	6070
21	606	2840	2950	4560	9020	2780	2040	3120	1670	837	601	4100
22	593	2490	2600	3710	14900	3180	2670	2780	1820	819	594	2630
23	583	2120	2400	3150	8420	4560	2630	2320	1590	810	730	2430
24	738	2190	2390	2770	5680	4580	2780	2220	1530	802	1340	2900
25	5840	3660	4230	2470	5720	3910	3010	2070	1640	819	4540	4840
26	3820	2480	27000	2260	5550	4720	3840	3840	1430	837	3600	3420
27	2170	2060	13400	2070	6850	7880	3150	4460	1340	837	1830	2570
28	2330	1850	7070	1910	6770	5770	2610	7120	1290	819	1680	2300
29	2100	1700	5340	1790	---	4420	2570	4580	1320	873	2330	2210
30	1640	1570	4200	1680	---	3640	2460	3570	1230	794	2030	1860
31	6520	---	3430	5220	---	3180	---	3870	---	754	1540	---
TOTAL	44082	81755	143850	124760	157900	185610	89190	99010	75580	30162	34769	64380
MEAN	1422	2725	4640	4025	5639	5987	2973	3194	2519	973	1122	2146
MAX	6520	11300	27000	28100	14900	22200	5060	7120	5460	1340	4540	6070
MIN	583	971	1150	1450	1730	2320	2040	2040	1230	754	594	837
CFSM	3.20	6.12	10.4	9.05	12.7	13.5	6.68	7.18	5.66	2.19	2.52	4.82
IN.	3.69	6.83	12.03	10.43	13.20	15.52	7.46	8.28	6.32	2.52	2.91	5.38
AC-FT	87440	162200	285300	247500	313200	368200	176900	196400	149900	59830	68960	127700

CAL YR 1976 TOTAL 1400584 MEAN 3827 MAX 41000 MIN 583 CFSM 8.60 IN 117.08 AC-FT 2778000
WTR YR 1977 TOTAL 1131040 MEAN 3099 MAX 28100 MIN 583 CFSM 6.96 IN 94.55 AC-FT 2243000

12041200 HOH RIVER AT U.S. HIGHWAY 101, NEAR FORKS, WA

LOCATION.--Lat 47°48'25", long 124°14'59", in NE¼NE¼ sec.33, T.27 N., R.12 W., Jefferson County, Hydrologic Unit 17100101, on left bank 250 ft (76 m) downstream from U.S. Highway 101, 1.0 mi (1.6 km) downstream from Hell Roaring Creek, 11.5 mi (18.5 km) southeast of Forks, and at mile 15.4 (24.8 km).

DRAINAGE AREA.--253 mi² (655 km²).

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses July 1960 to September 1961, November 1961, to September 1970 (partial-record station), October 1971 to September 1974. Prior to November 1961, published as 12041000, water temperatures: November 1970 to April 1971.

GAGE.--Water-stage recorder. Datum of gage is 163.64 ft (49.877 m) above mean sea level.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--17 years, 2,566 ft³/s (72.67 m³/s), 137.73 in/yr (3,498 mm/yr), 1,859,000 acre-ft/yr (2,290 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,000 ft³/s (1,300 m³/s) Jan. 15, 1961, gage height, 17.74 ft (5.407 m); minimum, 396 ft³/s (11.2 m³/s) Nov. 4, 1974; minimum gage height, 2.40 ft (0.732 m) Sept. 27, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0800	*11,700	331	*9.69	2.954

Minimum discharge, 450 ft³/s (12.7 m³/s) Oct. 23, gage height, 3.02 ft (0.920 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	917	2100	819	1700	1470	2270	1420	1880	2920	1440	1230	1050
2	882	1490	770	1630	1180	2060	1360	2070	2300	1370	1290	1090
3	896	1200	740	1500	1060	2090	1310	2930	1960	1290	1300	1770
4	758	1130	710	1390	1120	1790	1360	2460	2600	1200	1420	1930
5	710	1060	680	1300	1050	1640	1520	2110	2330	1130	1430	1750
6	746	924	698	1230	962	2650	1820	1820	2500	1040	1370	1370
7	746	875	1130	1160	914	6330	2020	1670	2800	978	1330	1160
8	791	854	2510	1110	866	7010	2240	1640	2400	906	1250	1010
9	833	861	2010	1060	962	5600	2650	1620	2100	1010	1210	914
10	1040	819	1530	1000	3070	3770	2110	1600	1900	970	1190	874
11	1000	764	1660	1040	2790	2900	1820	1620	1800	1160	1190	829
12	903	728	1450	1450	3730	2810	1630	1450	1900	1300	1290	822
13	840	692	1430	1230	2930	2250	1750	1520	1800	1150	1360	850
14	752	680	1200	1120	2120	2000	1590	1590	1800	1080	1320	866
15	680	996	1700	1270	1810	1760	1580	1520	1700	1100	1290	794
16	626	2650	1850	1420	1730	1610	1610	1390	1700	1180	1310	731
17	580	3770	2260	3430	2320	1470	1520	1330	1700	1400	1290	698
18	550	2510	2050	9820	2810	1390	1460	1310	1700	1180	1270	794
19	525	1970	1650	3940	2060	1330	1350	1290	1600	1040	1140	1950
20	505	1640	1480	2710	2650	1250	1270	1360	1600	986	1150	2980
21	485	1470	1390	2180	3860	1380	1210	1760	1900	986	1220	2170
22	470	1300	1270	1870	5870	1430	1490	1710	1900	1010	1120	1530
23	455	1150	1330	1670	3410	1700	1710	1530	1900	1040	1240	1480
24	630	1270	1190	1510	2540	1820	1960	1450	1600	1070	1520	1930
25	2710	1650	1790	1390	2490	1610	2190	1380	1760	1180	2530	1710
26	1940	1230	9560	1290	2270	1780	2390	1960	1510	1290	2150	1430
27	1320	1070	5550	1200	2640	2530	2020	2120	1410	1350	1450	1210
28	1350	980	3190	1120	2510	2090	1810	2170	1410	1270	1420	1150
29	1250	924	2550	1050	---	1780	1810	1790	1460	1190	1780	1140
30	1010	868	2140	994	---	1590	1790	1610	1380	1090	1480	1080
31	2510	---	1880	1790	---	1480	---	2130	---	1150	1210	---
TOTAL	29470	39645	60257	55774	63194	73360	51730	53860	56110	35616	42830	38582
MEAN	951	1322	1944	1799	2257	2366	1724	1737	1870	1149	1382	1286
MAX	2710	3770	9560	9820	5870	7010	2650	2930	2920	1440	2530	2980
MIN	455	680	680	994	866	1250	1210	1290	1350	970	1120	698
CFSM	3.76	5.23	7.68	7.11	8.92	9.35	6.81	6.87	7.39	4.54	5.46	5.08
IN.	4.33	5.83	8.86	8.20	9.29	10.79	7.61	7.92	8.25	5.24	6.30	5.67
AC-FT	58450	78640	119500	110600	125300	145500	102600	106800	111300	70640	84950	76530

CAL YR 1976 TOTAL 750400 MEAN 2067 MAX 13200 MIN 455 CFSM 8.17 IN 111.22 AC-FT 1500000
WTR YR 1977 TOTAL 600420 MEAN 1645 MAX 9560 MIN 455 CFSM 6.50 IN 88.28 AC-FT 1191000

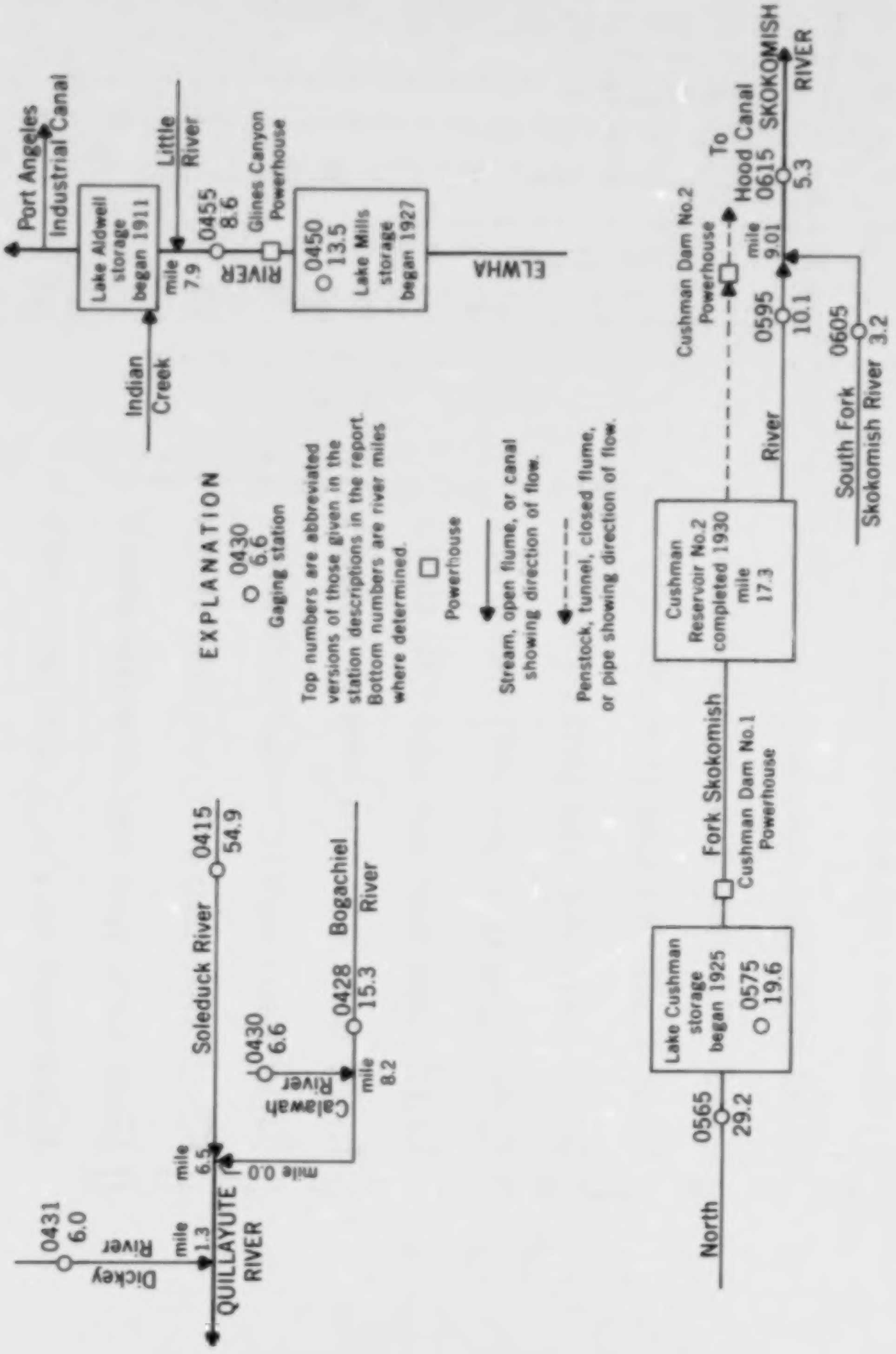
Port Angeles
Industrial Canal
Lake Aldwell storage began 1911
Little River
Indian Creek
mile 7.9
0455
8.6
Glines Canyon Powerhouse
RIVER
0450
13.5
Lake Mills storage began 1927
ELWHA
EXPLANATION
0430
6.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Dickey River
0431
6.0
mile 1.3
QUILLAYUTE RIVER
mile 6.5
mile 0.0
Calawah River
0430
6.6
mile 8.2
Soleduck River
0415
54.9
0428
15.3
Bogachiel River
Cushman Dam No.2 Powerhouse
To Hood Canal
mile 9.01
0615
5.3
SKOKOMISH RIVER
0595
10.1
0605
3.2
South Fork Skokomish River
Cushman Reservoir No.2 completed 1930 mile 17.3
North Fork Skokomish River
Cushman Dam No.1 Powerhouse
Lake Cushman storage began 1925
0575
19.6
0565
29.2

Figure 8. Gaging stations in Quillayute, Elwha, and Skokomish River basins.

12041500 SOLEDUCK RIVER NEAR FAIRHOLM, WA

LOCATION.--48°02'40", long 123°57'28", in lot 4, SE¼SW¼ sec.35, T.30 N., R.10 W., Clallum County, Hydrologic Unit 17100101, Olympic National Park, on right bank 0.1 mi (0.2 km) downstream from South Fork, 2.6 mi (4.2 km) southwest of Fairholm, and at mile 54.9 (88.3 km).

DRAINAGE AREA.--83.8 mi² (217.0 km²).

PERIOD OF RECORD.--October 1917 to September 1921, October 1933 to September 1971, water years 1972-76 (annual maximum), October 1976 to September 1977.

REVISED RECORDS.--WSP 1182: 1918-19, 1920(M), 1921, 1934-39, 1940(M), 1941-42, 1943(M), 1944-46, 1947-48(M). WSP 1216: Drainage area. WSP 1286: 1939, 1949.

GAGE.--Water-stage recorder. Altitude of gage is 1,060 ft (323 m), from topographic map. October 1917 to September 1921, water-stage recorder and Oct. 4 to Nov. 4, 1933, nonrecording gage, at same site at datum 1.2 ft (0.37 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.-- 43 years (water years 1918-21, 1934-71, 1977), 626 ft³/s (17.73 m³/s), 101.44 in/yr (2,577 mm/yr), 453,500 acre-ft/yr (559 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft³/s (666 m³/s) Nov. 26, 1949, gage height, 16.42 ft (5.005 m) from high-water mark in well, from rating curve extended above 13,000 ft³/s (368 m³/s) on basis of slope-area measurement of peak flow; minimum, 51 ft³/s (1.44 m³/s) Sept. 11, 12, 1944; minimum gage height, 0.74 ft (0.226 m) Aug. 20, 21, 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 26	0830	*4,150	118	*6.34	1.932

Minimum discharge, 79 ft³/s (2.24 m³/s) Aug. 20, 21, 22, 23, gage height, 0.74 ft (0.226 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	506	183	408	273	625	330	762	750	270	119	145
2	119	330	175	380	248	562	315	834	615	279	113	146
3	119	267	165	345	230	526	339	977	522	264	114	236
4	114	230	161	318	240	466	484	756	660	267	112	228
5	113	205	155	291	228	429	538	635	645	252	112	193
6	112	187	157	279	215	550	834	950	762	232	107	160
7	106	177	235	261	205	1420	970	526	780	210	102	142
8	103	167	534	252	201	1590	1040	534	645	205	100	132
9	102	165	422	232	240	1250	850	538	506	205	99	124
10	138	153	330	228	1040	822	685	570	478	199	94	118
11	126	145	418	232	894	675	595	514	490	230	91	112
12	113	142	352	297	1260	610	522	450	506	225	91	108
13	106	133	348	252	870	498	546	490	486	195	91	104
14	99	136	309	235	615	440	486	510	474	183	89	101
15	99	195	490	273	498	394	510	450	478	177	87	98
16	96	454	482	303	462	352	526	415	446	175	86	98
17	90	780	566	976	550	324	470	401	446	208	84	97
18	90	526	546	2190	650	312	436	412	462	183	82	98
19	87	390	426	935	498	294	404	415	435	167	82	158
20	86	315	384	640	655	279	376	446	390	157	80	426
21	86	285	348	510	963	297	373	575	394	149	79	374
22	85	258	315	436	1320	326	494	538	412	147	79	230
23	84	232	324	387	870	384	630	458	356	143	105	211
24	128	279	288	345	660	380	858	426	373	138	156	214
25	665	366	490	321	580	352	1040	398	387	136	346	210
26	422	264	3380	306	530	422	1030	510	318	133	291	186
27	250	230	1610	285	774	546	786	462	291	131	165	169
28	258	215	900	267	710	446	670	450	291	131	156	165
29	252	201	670	252	---	398	690	426	294	136	255	153
30	197	193	538	242	---	396	695	408	267	128	264	143
31	562	---	458	309	---	336	---	522	---	122	177	---
TOTAL	5120	8126	16159	12995	16479	16671	18450	16366	14360	5777	4008	5079
MEAN	165	271	521	419	589	538	615	528	479	186	129	169
MAX	665	780	3380	2190	1320	1590	1040	977	780	279	346	426
MIN	84	133	155	228	201	279	315	398	267	122	79	97
CFSM	1.97	3.23	6.22	5.00	7.03	6.42	7.34	6.30	5.72	2.22	1.54	2.02
IN.	2.27	3.61	7.17	5.77	7.32	7.40	8.19	7.27	6.37	2.56	1.78	2.25
AC-FT	10160	16120	32050	25780	32690	33070	36600	32460	28480	11460	7950	10070

CAL YR 1976 TOTAL 199080 MEAN 544 MAX 3940 MIN 84 CFSM 6.49 IN 88.37 AC-FT 394900
WTR YR 1977 TOTAL 139590 MEAN 382 MAX 3380 MIN 79 CFSM 4.56 IN 61.97 AC-FT 276900

12042800 BOGACHIEL RIVER NEAR FORKS, WA

LOCATION.--Lat 47°53'40", long 124°21'19", in NE¼NE¼ sec.34, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on right bank 50 ft (15 m) downstream from U.S. Highway 101, 0.6 mi (1.0 km) downstream from Bear Creek, 4.2 mi (6.8 km) southeast of Forks, and at mile 15.3 (24.6 km).

DRAINAGE AREA.--111 mi² (287 km²).

PERIOD OF RECORD.--April 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 170 ft (52 m), from topographic map.

REMARKS.--Records good except those above 6,000 ft³/s (170 m³/s) and those for period Feb. 22 to Mar. 30, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s (674 m³/s) Dec. 2, 1975, gage height, 15.81 ft (4.819 m); minimum, 92 ft³/s (2.61 m³/s) Aug. 19, 20, 21, 22, 23, 1977, gage height, 7.64 ft (2.329 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 11,000 ft³/s (312 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0800	*8,940	253	*12.84	3.914

Minimum discharge, 92 ft³/s (2.61 m³/s) Aug. 19, 20, 21, 22, 23, gage height, 7.64 ft (2.329 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143	1270	310	710	1030	1300	694	646	1130	191	116	220
2	168	804	290	678	678	1140	622	686	983	203	111	288
3	187	598	275	606	550	1220	598	1330	705	215	107	526
4	157	510	260	503	502	984	646	1180	1080	233	107	662
5	154	419	251	454	550	849	786	1030	867	215	107	480
6	154	370	246	433	454	1860	1030	831	813	211	104	336
7	147	370	558	391	440	4950	1070	702	759	187	104	275
8	147	358	2020	364	391	5020	1120	646	638	175	101	238
9	187	322	1330	322	447	3980	1710	598	518	175	98	211
10	260	290	885	295	1960	2290	1190	590	475	171	95	203
11	265	270	1180	346	1860	1630	1020	574	461	215	95	195
12	199	255	912	822	2810	1560	849	475	440	224	95	187
13	171	237	840	606	1860	1110	975	598	412	187	95	175
14	161	237	662	496	1160	930	831	654	384	168	95	157
15	140	358	1120	614	840	795	876	638	370	164	95	157
16	134	1720	1150	777	1030	662	885	518	360	191	95	154
17	131	2990	1640	2760	1570	558	768	475	322	300	95	147
18	125	1440	1540	6200	2030	510	718	447	322	219	95	171
19	122	975	1100	2480	1280	475	630	412	300	179	92	638
20	119	726	983	1500	1670	419	558	405	275	168	92	1500
21	116	614	786	1160	2800	590	518	598	270	150	92	950
22	113	534	662	930	4750	849	614	550	285	150	92	810
23	113	447	630	777	2340	1100	782	433	251	140	122	940
24	211	566	566	670	1480	1130	831	447	251	135	207	900
25	1600	912	1120	582	1430	957	921	412	280	130	638	930
26	939	566	7060	534	1290	1230	1020	786	233	127	475	470
27	510	461	3740	489	2070	1050	813	1080	219	120	233	420
28	558	412	1820	440	1600	1320	670	1490	211	120	285	370
29	468	370	1360	412	---	1020	654	993	207	124	475	340
30	370	334	1020	391	---	840	614	759	195	118	377	320
31	1750	---	858	1440	---	742	---	813	---	116	260	---
TOTAL	10011	19743	37094	29182	40952	43870	24925	21796	14022	5425	5240	11961
MEAN	323	658	1197	941	1463	1415	831	703	467	175	169	399
MAX	1750	2990	7060	6200	4750	5020	1710	1490	1130	300	638	1500
MIN	113	237	246	295	391	419	518	405	195	116	92	147
CFSM	2.91	5.93	10.8	8.48	13.2	12.7	7.49	6.33	4.21	1.58	1.52	3.60
IN.	3.36	6.62	12.43	9.78	13.72	14.70	8.35	7.30	4.70	1.82	1.76	4.01
AC-FT	19860	39160	73580	57880	81230	87020	49440	43230	27810	10760	10410	23720

CAL YR 1976 TOTAL 326113 MEAN 891 MAX 8410 MIN 113 CFSM 8.03 IN 109.29 AC-FT 646800
WTR YR 1977 TOTAL 264229 MEAN 724 MAX 7060 MIN 92 CFSM 6.52 IN 88.55 AC-FT 524100

12043000 CALAWAH RIVER NEAR FORKS, WA

LOCATION.--Lat 47°57'57", long 124°23'30", in NW¼SW¼ sec.4, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on left bank 30 ft (9 m) downstream from U.S. Highway 101 bridge, 0.8 mi (1.3 km) northwest of Forks, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--129 mi² (334 km²).

PERIOD OF RECORD.--November 1897 to December 1901, October to December 1975 (discharge measurements and peak discharges), January 1976 to current year. Monthly and peak discharge only, November 1897 and August 1898, published in WSP 1316. Published as Calowa River at Forks, November 1897 to December 1899; as Calowa River near Forks, 1900; and as Kalawa River near Forks, 1901.

REVISED RECORDS.--WSP 1316: 1898-1902. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 201.58 ft (61.442 m) above mean sea level. November 1897 to December 1901, nonrecording gage at same site but at different datum; October to December 1975, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s (640 m³/s) Dec. 2, 1975, gage height, 16.99 ft (5.179 m), from rating curve extended above 4,600 ft³/s (130 m³/s) on basis of step-backwater analysis; maximum gage height, 17.2 ft (5.24 m), from graph based on gage readings, Nov. 18, 1897; minimum, 15 ft³/s (0.42 m³/s) Sept. 28, 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10,000 ft³/s (283 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1900	*9,000	255	*11.52	3.511

Minimum discharge, 92 ft³/s (2.61 m³/s) Aug. 20, 21, 22, gage height, 2.66 ft (0.811 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	1160	321	671	635	1380	821	428	840	187	112	180
2	126	730	295	644	510	1150	742	424	856	182	109	208
3	130	520	278	560	460	1110	705	820	736	190	106	368
4	109	432	266	495	476	952	748	958	790	183	105	452
5	116	372	258	452	432	844	838	958	640	180	104	416
6	115	316	250	416	435	1610	976	778	600	190	103	309
7	115	285	530	388	376	5040	928	655	535	167	102	267
8	115	268	1980	364	356	5080	886	570	672	155	100	216
9	118	254	1420	340	388	8680	1460	500	436	155	99	187
10	172	241	916	320	1610	2870	1220	460	400	147	98	170
11	190	226	1070	344	1550	2040	1020	448	372	185	98	157
12	150	214	892	490	1940	1820	876	450	356	190	97	147
13	130	202	814	428	1660	1430	964	452	328	167	96	138
14	128	205	670	456	1130	1250	862	448	316	155	95	136
15	117	316	856	448	862	1080	862	510	295	145	95	130
16	115	1150	920	545	862	868	881	440	288	190	94	130
17	111	2340	1290	1500	1150	760	882	420	264	205	93	128
18	109	1480	1310	9630	1510	695	736	392	250	202	93	140
19	108	950	1000	2330	1110	650	665	368	238	175	93	306
20	106	605	832	1380	1610	600	665	352	232	142	92	1200
21	104	585	760	1620	2880	730	560	420	226	150	92	780
22	103	560	615	814	5520	928	621	384	232	140	92	485
23	103	436	575	675	2630	1210	644	348	211	136	112	428
24	222	525	515	592	1680	1250	655	372	208	132	157	480
25	1350	680	863	520	1450	1090	655	352	220	128	336	464
26	1120	540	5930	468	1290	1240	680	565	196	126	244	408
27	480	464	3450	428	1830	1990	590	766	187	120	167	356
28	400	420	1780	396	1690	1500	505	1220	182	118	162	320
29	323	384	1290	368	---	1180	468	916	175	122	368	288
30	296	348	976	340	---	976	442	728	170	117	344	264
31	1238	---	790	722	---	868	---	715	---	114	226	---
TOTAL	8242	17267	33550	24525	37907	50041	23406	17587	11330	4953	4265	9624
MEAN	266	576	1082	791	1354	1614	780	567	378	160	138	321
MAX	1350	2340	5930	9630	5520	8680	1460	1220	856	205	368	1200
MIN	103	202	250	320	356	600	442	348	170	114	92	128
CFSM	2.06	4.47	8.39	6.13	10.5	12.5	6.05	4.40	2.93	1.24	1.07	2.49
IN.	2.38	4.98	9.67	7.07	10.93	14.43	6.75	5.07	3.27	1.43	1.23	2.78
AC-FT	16350	34250	66550	48650	75190	99260	46430	34880	22470	9820	8460	19090

CAL YR 1976 TOTAL 308597 MEAN 843 MAX 8760 MIN 103 CFSM 6.54 IN 88.99 AC-FT 612100
WTR YR 1977 TOTAL 242703 MEAN 665 MAX 9630 MIN 92 CFSM 5.16 IN 69.99 AC-FT 481400

12043100 DICKEY RIVER NEAR LA PUSH, WA

LOCATION.--Lat 47°57'53", long 124°32'53", in NE¼NE¼ sec.6, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, on left bank 1.0 mi (1.6 km) upstream from Colby Creek, 5.5 mi (8.8 km) northeast of La Push and at mile 6.0 (9.7 km).

DRAINAGE AREA.--86.3 mi² (223.5 km²).

PERIOD OF RECORD.--August 1962 to September 1973, water years 1974-76 (annual maximum), October 1976 to September 1977.

GAGE.--Water-stage recorder. Altitude of gage is 50 ft (15 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Aug. 29 to Sept. 30, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years (water years 1963-73, 1977), 546 ft³/s (15.46 m³/s), 85.92 in/yr (2,182 mm/yr), 395,600 acre-ft/yr (488 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,300 ft³/s (490 m³/s) Jan. 19, 1968, gage height, 22.15 ft (6.751 m) from high-water mark in well, from rating curve extended above 4,900 ft³/s (139 m³/s) on basis of slope-area measurement of peak flow; minimum, 8.0 ft³/s (0.23 m³/s) Aug. 29, 30, 31, 1967, gage height, 0.79 ft (0.241 m).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0130	*4,780	135	*9.82	2.993

Minimum discharge, 17 ft³/s (0.48 m³/s) Aug. 21, 22, gage height, 0.97 ft (0.296 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	700	165	333	680	776	301	107	420	47	31	55
2	56	420	152	363	636	626	297	107	354	48	29	65
3	49	326	140	300	342	676	267	431	297	53	28	290
4	58	267	136	267	336	490	246	456	442	57	26	350
5	53	231	127	231	318	431	219	428	369	53	25	230
6	53	195	165	201	294	1140	192	297	295	48	25	150
7	51	186	473	185	264	2550	177	234	249	45	25	110
8	47	186	1080	162	236	2730	189	198	219	41	23	90
9	61	169	688	148	237	2370	438	176	186	39	22	75
10	216	165	508	138	813	1240	389	158	165	38	21	65
11	195	129	613	210	736	889	312	176	152	61	24	55
12	171	114	518	540	1670	1060	273	162	136	63	22	48
13	103	107	512	327	1030	680	360	269	120	63	21	42
14	85	103	417	221	613	570	297	269	116	51	21	37
15	77	150	652	420	480	504	215	300	103	44	20	36
16	71	419	720	720	487	417	360	237	98	54	20	43
17	63	1340	1180	2320	692	356	355	180	90	176	19	40
18	58	740	696	2830	777	318	240	160	79	103	18	45
19	56	920	581	1050	536	301	225	140	72	72	18	330
20	51	410	442	680	846	270	204	130	69	58	18	680
21	48	375	445	526	1360	330	183	255	71	51	17	290
22	46	330	406	431	2140	414	273	219	83	47	18	210
23	45	279	372	363	995	656	237	165	71	44	29	180
24	46	309	324	318	651	692	186	165	66	40	48	160
25	512	459	790	282	868	504	165	158	71	37	148	450
26	336	312	3480	252	864	692	160	282	63	36	168	260
27	244	264	1380	228	1140	1190	148	466	58	35	86	190
28	389	231	788	207	688	746	136	856	56	36	69	170
29	315	207	610	189	---	515	125	470	52	36	100	160
30	237	189	476	174	---	417	116	339	48	36	90	140
31	969	---	386	1050	---	378	---	268	---	33	70	---
TOTAL	4823	10066	19419	15726	20738	24863	7280	8300	4680	1661	1290	5165
MEAN	156	335	626	507	741	802	243	268	156	53.6	41.6	172
MAX	969	1340	3480	2830	2140	2730	438	856	442	176	168	680
MIN	45	103	127	138	236	270	116	107	48	33	17	36
CFSM	1.81	3.88	7.25	5.88	8.58	9.29	2.82	3.11	1.81	.62	.48	1.99
IN.	2.08	4.33	8.37	6.78	8.94	10.72	3.14	3.58	2.02	.72	.56	2.22
AC-FT	9570	19970	38520	31190	41130	49320	14440	16460	9280	3290	2560	10240

WTR YR 1977 TOTAL 123984 MEAN 340 MAX 3480 MIN 17 CFSM 3.86 IN 52.44 AC-FT 245900

OZETTE RIVER BASIN

12043163 OZETTE LAKE AT OZETTE, WA

LOCATION.--Lat 48°09'12", long 124°40'05", in NE¼NE¼ sec.31, T.31N., R.15 W., Clallam County, Hydrologic Unit 17100101, 3 mi (4.8 km) southeast of Cape Alava. Samples were taken in the north end and in the main body of the lake.

DRAINAGE AREA.--77.5 mi² (200.7 km²).

PERIOD OF RECORD.--Water years 1976 to November 1976 (discontinued).

WATER QUALITY DATA NOVEMBER 1976

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
NOV								
09...	0930	17	40	12.0	--	9.4	--	--
09...	0940	57	36	12.0	--	9.3	--	--
09...	0950	82	30	9.1	--	8.1	--	--
09...	0951	(a)	--	--	--	--	18	5
09...	1100	17	30	12.0	--	9.6	--	--
09...	1110	80	35	9.6	--	8.9	--	--
09...	1120	209	35	7.6	--	8.4	--	--
09...	1121	(b)	--	--	--	--	9	6
10...	0930	17	38	12.0	25	9.6	--	--
10...	0940	80	36	9.0	25	8.4	--	--
10...	0950	190	36	7.4	35	9.6	--	--
10...	0951	(c)	--	--	--	--	18	7
10...	1110	17	37	12.0	25	9.7	--	--
10...	1120	80	37	8.0	35	9.2	--	--
10...	1130	205	36	7.0	20	9.3	--	--
10...	1131	(d)	--	--	--	--	12	8

DATE	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL NITRATE (N) (MG/L)
NOV									
09...	--	--	--	--	--	--	--	1.4	.02
09...	--	--	--	--	--	--	--	1.4	.02
09...	--	--	--	--	--	--	--	2.4	.08
09...	2.5	.9	3.3	.3	6	3.2	5.1	--	--
09...	--	--	--	--	--	--	--	1.5	.02
09...	--	--	--	--	--	--	--	2.1	.06
09...	--	--	--	--	--	--	--	2.4	.08
09...	2.6	.9	3.5	.3	12	3.1	5.0	--	--
10...	--	--	--	--	--	--	--	1.4	.02
10...	--	--	--	--	--	--	--	2.1	.07
10...	--	--	--	--	--	--	--	2.4	.08
10...	3.0	2.0	3.4	.3	13	4.6	5.0	--	--
10...	--	--	--	--	--	--	--	1.6	.02
10...	--	--	--	--	--	--	--	2.2	.06
10...	--	--	--	--	--	--	--	2.5	.09
10...	2.9	1.1	3.4	.3	4	5.9	5.0	--	--

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	POTENTIAL ALGAL GROWTH BOTTLE TEST (MG/L)
NOV								
09...	.00	.04	.12	.01	.00	--	--	--
09...	.00	.04	.11	.01	.00	--	--	--
09...	.00	.03	.10	.01	.00	--	--	3.1
09...	--	--	--	--	--	130	20	--
09...	.00	.04	.16	.01	.00	--	--	--
09...	.00	.03	.14	.01	.00	--	--	--
09...	.00	.06	.12	.01	.00	--	--	.3
09...	--	--	--	--	--	150	10	--
10...	.00	.06	.15	.01	.00	--	--	--
10...	.00	.03	.13	.01	.00	--	--	--
10...	.01	.04	.13	.01	.00	--	--	.4
10...	--	--	--	--	--	190	40	--
10...	.00	.05	.15	.01	.00	--	--	--
10...	.00	.05	.13	.01	.00	--	--	--
10...	.00	.05	.13	.01	.00	--	--	.4
10...	--	--	--	--	--	170	0	--

(a) Composite from 10, 30, 50, 65, 75 and 90 ft sampling depths.
(b) Composite from 10, 30, 70, 90, 100 and 200 ft sampling depths.
(c) Composite from 5, 30, 70, 90, 100 and 210 ft sampling depths.
(d) Composite from 5, 30, 70, 90, 160 and 230 ft sampling depths.

12043150 OZETTE RIVER AT OZETTE, WA

LOCATION.--Lat 48°09'13", long 124°40'04", in NE¼NE¼ sec.31, T.31 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank, 50 ft (15 m) west of Ozette Ranger station, 75 ft (23 m) upstream from foot bridge, 250 ft (76 m) downstream from Ozette Lake and 3 mi (4.8 km) southeast of Cape Alava.

DRAINAGE AREA.--77.5 mi^2 (200.7 km^2).

PERIOD OF RECORD.--August 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 30 ft (9 m) from topographic map.

REMARKS.--Records good. Flow affected by natural regulation from Ozette Lake. No diversion above station.

EXTREMES FOR CURRENT PERIOD.--August to September 1976: Maximum discharge during period, 145 ft^3/s (4.11 m^3/s) Sept. 18, gage height, 32.38 ft (9.869 m); minimum, 74 ft^3/s (2.10 m^3/s) Aug. 12, gage height, 31.76 ft (9.680 m).
Water year 1977: Maximum discharge, 1,030 ft^3/s (29.2 m^3/s) Mar. 9, gage height, 36.43 ft (11.104 m); minimum, 32 ft^3/s (0.91 m^3/s) Aug. 22, gage height, 31.40 ft (9.571 m).

Discharge measurements made prior to beginning of continuous discharge record

Date	Discharge(cfs)	Date	Discharge(cfs)	Date	Discharge(cfs)	Date	Discharge (cfs)
Jan. 14, 1976	1,080	Mar. 29	1,020	May 24	153	July 19	135
Feb. 17	950	Apr. 26	419	June 21	233		

DISCHARGE, IN CUBIC FEET PER SECOND, 1976

DAY	AUG.	SEPT.	DAY	AUG.	SEPT.	DAY	AUG.	SEPT.	DAY	AUG.	SEPT.	DAY	AUG.	SEPT.	DAY	AUG.	SEPT.
1	96	122	6	87	138	11	76	127	16	87	138	21	113	126	26	116	114
2	94	121	7	85	137	12	75	127	17	87	137	22	113	125	27	120	113
3	92	119	8	83	135	13	80	127	18	86	134	23	113	122	28	125	109
4	90	121	9	80	133	14	83	135	19	91	131	24	114	119	29	126	106
5	88	134	10	78	130	15	84	140	20	108	129	25	113	116	30	126	103
															31	124	---

	AUG.	SEPT.
TOTAL	3,033	3,768
MEAN	97.8	126
MAX	126	140
MIN	75	103
CFSM	1.26	1.63
IN	1.46	1.81
AC-FT	6,020	7,470

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	180	250	566	504	730	599	261	277	129	71	51
2	101	187	242	548	502	721	574	257	277	125	69	53
3	99	188	235	530	486	711	550	273	277	125	67	60
4	97	187	228	508	473	692	526	283	285	122	65	69
5	96	183	223	486	462	669	504	289	289	118	63	75
6	94	181	223	464	449	687	482	285	285	113	61	77
7	91	181	246	445	435	786	462	279	279	110	59	76
8	91	183	305	426	420	901	449	271	271	105	57	75
9	98	181	339	410	410	1010	456	261	261	101	54	74
10	95	177	349	393	441	1010	456	251	253	99	52	73
11	97	173	368	382	469	982	445	248	246	101	50	71
12	97	170	386	397	528	980	435	241	237	101	48	70
13	96	165	395	397	568	949	437	242	230	99	47	68
14	94	164	397	393	563	915	426	239	223	96	46	68
15	91	164	408	393	548	884	424	239	214	94	43	66
16	89	190	418	397	539	846	414	235	206	96	41	64
17	87	248	443	449	539	805	403	230	197	106	41	64
18	82	287	460	614	546	766	389	223	192	106	40	64
19	81	297	458	671	539	730	376	215	183	105	37	77
20	79	297	456	665	552	694	363	214	178	102	36	110
21	77	293	454	645	616	671	351	215	175	99	35	125
22	75	293	447	623	669	660	351	212	170	96	34	128
23	74	287	441	599	676	667	345	208	165	94	36	128
24	81	285	433	574	662	673	335	205	164	91	38	131
25	97	291	439	550	665	665	325	201	159	88	44	157
26	107	287	566	526	682	662	315	206	154	84	46	170
27	111	281	638	504	704	687	303	222	149	82	47	172
28	120	273	640	480	723	685	293	257	143	82	47	172
29	127	265	627	460	---	667	283	267	138	79	49	170
30	129	259	610	439	---	643	271	269	132	76	51	167
31	156	---	588	460	---	621	---	271	---	72	51	---
TOTAL	3000	6797	12712	15394	15370	23769	12342	7569	6409	3096	1525	2925
MEAN	96.8	227	410	497	549	767	411	244	214	99.9	49.2	97.5
MAX	156	297	640	671	723	1010	599	289	289	129	71	172
MIN	74	164	223	382	410	621	271	201	132	72	34	51
CFSM	1.25	2.93	5.29	6.41	7.08	9.90	5.30	3.15	2.76	1.29	.64	1.26
IN.	1.44	3.26	6.10	7.39	7.38	11.41	5.92	3.63	3.08	1.49	.73	1.40
AC-FT	5950	13480	25210	30530	30490	47150	24480	15010	12710	6140	3020	5800

WTR YR 1977 TOTAL 118908 MEAN 384 MAX 1010 MIN 34 CFSM 3.92 IN 53.24 AC-FT 220000

12043163 SOOES RIVER BELOW MILLER CREEK NEAR OZETTE, WA

LOCATION.--Lat 48°15'58, long 124°37'30", in NE¼NE¼ sec.21, T.32 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank at downstream side on Crown Zellerback logging road, 0.6 mi (1.0 km) downstream from Miller Creek and 8 mi (13 km) north of Ozette.

DRAINAGE AREA.--32.0 mi^2 (82.9 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1976 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 70 ft (21.3 m), from topographic map.

REMARKS.--Water-discharge records excellent except those for periods of no gage-height record, Feb. 13 to Mar. 7, and Mar. 12-25, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,070 ft^3/s (58.6 m^3/s) Jan. 18, 1977, gage height, 11.53 ft (3.514 m); minimum, 13 ft^3/s (0.37 m^3/s) Aug. 18, 19, 20, 21, 1977, gage height, 5.71 ft (1.740 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,070 ft^3/s (58.6 m^3/s) Jan. 18, gage height, 11.53 ft (3.514 m); minimum, 13 ft^3/s (0.37 m^3/s) Aug. 18, 19, 20, 21, gage height, 5.71 ft (1.740 m).

REVISIONS.--The maximum discharge for the water year 1976 has been revised to 1,820 ft^3/s (51.5 m^3/s) Mar. 24, 1976, gage height, 11.12 ft (3.389 m), superseding figure published in the report for 1976.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	270	63	110	335	280	115	52	184	30	22	34
2	50	152	58	112	156	250	99	53	138	33	21	43
3	55	110	56	98	116	250	90	230	109	51	20	150
4	34	90	53	85	109	190	82	143	217	55	19	207
5	31	79	51	77	107	160	77	122	150	40	18	122
6	31	72	65	69	102	500	71	91	108	33	17	72
7	31	104	302	65	85	800	67	77	92	30	17	56
8	27	106	756	62	75	950	74	70	83	28	17	48
9	36	78	287	58	79	780	272	64	74	27	16	42
10	116	65	190	55	452	374	151	59	67	25	16	37
11	81	59	395	61	360	305	133	65	62	60	15	32
12	56	54	275	285	1200	400	115	58	57	67	15	30
13	43	49	253	130	620	300	212	77	54	47	15	28
14	38	46	178	117	340	240	130	79	50	38	14	25
15	33	55	326	200	220	200	144	104	49	34	14	24
16	30	450	299	280	190	170	123	76	46	81	14	29
17	30	870	464	798	300	140	106	64	43	169	14	26
18	27	380	323	1430	320	120	101	59	39	71	13	30
19	26	260	197	413	220	110	90	55	38	53	14	210
20	24	200	197	242	360	100	82	54	37	44	13	434
21	24	150	190	174	600	120	81	102	38	39	14	144
22	23	120	150	138	800	160	134	83	57	35	15	90
23	23	110	140	117	450	230	99	66	43	32	21	76
24	162	150	117	101	250	250	81	76	41	30	40	67
25	368	210	302	90	300	200	73	65	51	28	175	242
26	158	140	1260	82	400	350	73	95	40	28	72	114
27	110	110	484	74	500	440	67	184	36	27	42	82
28	280	98	262	70	350	260	62	250	33	27	45	71
29	150	82	192	64	---	177	58	146	33	27	68	68
30	108	68	154	59	---	141	55	106	30	25	59	59
31	466	---	126	506	---	130	---	122	---	24	47	---
TOTAL	2697	4787	8165	6222	9396	9077	3117	2947	2099	1338	922	2692
MEAN	87.0	160	263	201	336	293	104	95.1	70.0	43.2	29.7	89.7
MAX	466	870	1260	1430	1200	950	272	250	217	169	175	434
MIN	23	46	51	55	75	100	55	52	30	24	13	24
CFSM	2.72	5.00	8.22	6.28	10.5	9.16	3.25	2.97	2.19	1.35	.93	2.80
IN.	3.14	5.56	9.49	7.23	10.92	10.55	3.62	3.43	2.44	1.56	1.07	3.13
AC-FT	5350	9500	16200	12340	18640	18000	6180	5850	4160	2650	1830	5340

WTR YR 1977 TOTAL 53459 MEAN 146 MAX 1430 MIN 13 CFSM 4.56 IN 62.14 AC-FT 106000

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to March 1977 (discontinued).

WATER-QUALITY DATA OCTOBER 1976 TO MARCH 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./ 100 ML)
NOV , 1976									
17...	0930	660	45	7.1	10.6	22	10.3	--	--
17...	1315	520	--	--	--	--	--	5400	B200
JAN , 1977									
18...	1847	1820	39	6.9	8.0	45	10.1	B1400	89
MAR									
23...	0945	374	55	7.1	6.0	15	11.1	--	--

B Results based upon colony counts outside the ideal range.

12043173 WAATCH RIVER BELOW EDUCKET CREEK AT NEAH BAY, WA

LOCATION.--Lat 48°21'25", long 124°37'36", in NW¼SE¼ sec.15, T.33 N., R.15 W., Clallam County, Hydrologic Unit 17100101, Makah Indian Reservation, on left bank at Neah Bay pumping plant, 80 ft (24 m) downstream from Educket Creek, and 0.7 mi (1.1 km) south of Neah Bay.

DRAINAGE AREA.--9.96 mi^2 (25.80 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Water-discharge records good. Makah Water Utility diverts approximately 21 acre-ft (25,900 m^3/yr) annually at the gage, for municipal use. No regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 838 ft^3/s (23.7 m^3/s) Jan. 18,1977, gage height, 7.55 ft (2.301 m); minimum, 0.48 ft^3/s (0.014 m^3/s) Aug. 15, 1977, gage height, 0.67 ft (0.204 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 838 ft^3/s (23.7 m^3/s) Jan. 18, gage height, 7.55 ft (2.301 m); minimum, 0.48 ft^3/s (0.014 m^3/s) Aug. 15, gage height, 0.67 ft (0.204 m).

REVISIONS.--The maximum discharge for the the water year 1976 has been revised to 251 ft^3/s (7.11 m^3/s) June 15, 1976, gage height, 4.13 ft (1.259 m) superseding figure published in the report for 1976.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	79	20	23	88	54	24	9.6	40	5.4	3.7	10
2	15	45	18	24	48	45	21	11	29	7.9	3.4	12
3	11	31	16	22	35	60	18	54	26	18	2.9	45
4	7.1	25	15	20	30	37	16	28	48	14	2.8	70
5	7.3	24	14	18	28	34	15	23	25	9.3	2.6	35
6	7.9	21	20	16	24	166	13	18	20	7.5	2.3	20
7	6.8	25	60	15	20	302	12	15	17	6.5	2.3	17
8	6.3	25	230	14	18	340	14	13	15	6.0	2.0	15
9	11	22	80	13	19	192	50	11	14	5.5	1.9	13
10	46	19	45	12	132	94	31	10	13	5.4	1.7	11
11	31	17	90	16	121	100	26	9.9	12	28	1.5	9.8
12	18	16	60	78	290	129	23	8.8	11	23	1.4	8.8
13	14	15	50	41	98	65	40	13	10	13	1.3	7.8
14	12	14	45	44	46	60	26	15	9.2	10	1.2	7.1
15	11	18	107	69	30	57	28	22	8.5	9.3	1.1	6.6
16	9.7	146	83	178	26	41	23	14	7.7	64	1.0	7.2
17	9.5	224	140	328	54	33	22	11	7.3	63	.95	6.8
18	8.8	91	89	450	46	27	19	10	6.7	23	.85	8.4
19	9.2	51	52	125	33	23	17	9.4	6.3	16	1.0	91
20	11	40	40	64	93	20	16	9.3	6.3	13	.97	177
21	11	33	34	42	131	40	15	38	7.2	11	1.0	53
22	10	28	29	33	122	70	28	20	15	9.5	1.2	30
23	10	25	26	27	56	117	23	16	8.3	8.4	3.7	22
24	90	35	24	23	34	82	20	20	10	7.4	9.5	18
25	152	50	100	22	72	51	18	16	13	6.5	65	77
26	62	40	320	22	55	105	17	28	8.7	6.3	25	33
27	41	32	125	20	108	117	15	69	7.7	5.6	12	23
28	61	28	64	19	69	70	13	40	6.5	6.2	11	18
29	41	25	43	18	---	45	11	26	6.5	6.6	18	15
30	32	22	31	17	---	34	10	30	5.7	5.3	15	13
31	139	---	25	160	---	29	---	33	---	4.5	12	---
TOTAL	906.5	1266	2095	1973	1926	2639	624	651.0	420.6	425.1	210.27	880.5
MEAN	29.2	42.2	67.6	63.6	68.8	85.1	20.8	21.0	14.0	13.7	6.78	29.4
MAX	152	224	320	450	290	340	50	69	48	64	65	177
MIN	4.9	14	14	12	18	20	10	8.8	5.7	4.5	.85	6.6
CFSM	2.93	4.24	6.79	6.39	6.91	8.54	2.09	2.11	1.41	1.38	.68	2.95
IN.	3.39	4.73	7.82	7.37	7.19	9.86	2.33	2.43	1.57	1.59	.79	3.29
AC-FT	1800	2510	4160	3910	3820	5230	1240	1290	834	843	417	1750

WTR YR 1977 TOTAL 14016.97 MEAN 38.4 MAX 450 MIN .85 CFSM 3.86 IN 52.35 AC-FT 27800

WAATCH RIVER BASIN

12043173 WAATCH RIVER BELOW EDUCKET CREEK AT NEAH BAY, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to November 1977 (discontinued).

WATER-QUALITY DATA NOVEMBER 1976 TO NOVEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)
NOV , 1976									
16...	1335	179	51	7.0	9.9	2	10.7	--	--
17...	1510	247	--	--	--	--	--	B1000	B31
JAN , 1977									
18...	1202	387	44	7.3	7.8	8	11.5	400	B10
MAR									
22...	1330	52	38	6.9	7.0	1	10.3	--	--
NOV									
02...	1605	131	50	6.3	8.0	1	11.3	--	--
03...	1025	77	--	--	--	--	--	100	86

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
NOV , 1976									
16...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JAN , 1977									
18...	--	--	--	--	--	--	--	--	--
MAR									
22...	--	--	--	--	--	--	--	--	--
NOV									
02...	13	4	3.5	1.1	5.1	.4	11	0	9
03...	--	--	--	--	--	--	--	--	--

DATE	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
NOV , 1976									
16...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JAN , 1977									
18...	--	--	--	--	--	--	--	--	--
MAR									
22...	--	--	--	--	--	--	--	--	--
NOV									
02...	8.8	4.9	4.3	.69	.07	.13	.20	.89	3.9
03...	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12043190 SAIL RIVER NEAR NEAH BAY, WA

LOCATION.--Lat 48°21'27", long 124°33'37", in NW¼SE¼ sec.10, T.33 N., R.14 W., Clallam County, Hydrologic Unit 17100101, Makah Indian Reservation, on right bank 100 ft (30 m) upstream from State Highway 112, 0.2 mi (0.3 km) upstream from mouth, and 3.0 mi (4.8 km) east of Neah Bay.

DRAINAGE AREA.--5.42 mi^2 (14.04 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 455 ft^3/s (12.9 m^3/s) Mar. 8, 1977, gage height, 5.35 ft (1.631 m); minimum, 1.3 ft^3/s (0.037 m^3/s) Aug. 12, 13, 17, 18, 19, 20, 21, 1977, gage height, 2.97 ft (0.905 m).

EXTREME FOR CURRENT YEAR.--Maximum discharge, 455 ft^3/s (12.9 m^3/s) Mar. 8, gage height, 5.35 ft (1.631 m); minimum, 1.3 ft^3/s (0.037 m^3/s) Aug. 12, 13, 17, 18, 19, 20, 21, gage height, 2.97 ft (0.905 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	63	8.9	13	73	53	22	8.9	35	2.8	2.3	6.2
2	8.9	42	7.8	13	47	50	18	10	36	3.5	2.1	11
3	4.4	28	6.7	11	34	66	15	44	34	5.4	1.9	22
4	3.1	19	5.8	8.9	25	50	13	34	44	4.7	1.8	55
5	3.1	14	5.4	7.8	21	41	12	32	42	3.5	1.8	39
6	3.3	12	7.8	7.3	18	87	11	27	34	3.3	1.8	22
7	2.8	13	49	6.2	15	210	9.4	21	27	3.1	1.6	15
8	2.8	11	135	5.8	13	254	11	18	20	2.8	1.6	11
9	5.1	10	76	5.4	13	179	38	15	16	2.3	1.5	8.4
10	14	8.9	47	5.1	74	96	29	13	14	2.6	1.5	6.7
11	13	7.8	41	7.8	88	80	31	12	12	5.8	1.4	5.4
12	9.4	6.7	35	35	205	85	29	11	10	4.7	1.4	4.4
13	7.3	6.2	34	21	110	64	41	13	8.9	3.8	1.3	4.1
14	6.2	6.2	29	22	61	53	34	13	8.4	3.3	1.4	3.5
15	5.4	8.9	56	38	39	44	36	15	7.3	3.3	1.4	3.3
16	4.7	70	55	90	31	35	35	11	6.7	13	1.4	3.3
17	4.4	133	74	186	48	29	34	11	5.4	15	1.3	3.3
18	3.8	80	63	292	48	24	35	10	5.1	9.4	1.3	4.1
19	3.5	48	45	108	41	20	29	8.9	5.1	7.3	1.3	36
20	3.3	31	32	58	64	18	25	8.4	4.7	5.4	1.3	90
21	3.1	24	22	36	103	27	22	17	4.7	5.1	1.4	52
22	2.8	17	18	25	125	39	31	14	5.8	4.4	1.5	32
23	2.8	13	16	19	80	76	25	12	4.1	4.1	3.3	24
24	46	22	13	14	50	68	21	13	5.0	3.8	8.9	18
25	96	31	44	12	61	53	19	11	4.7	3.3	42	47
26	58	22	196	10	61	66	17	15	4.1	3.3	7.3	29
27	36	18	110	8.4	94	85	14	29	3.8	3.1	4.7	22
28	36	14	58	7.3	71	66	13	38	3.5	3.1	10	18
29	20	12	36	6.2	---	48	11	31	3.3	3.1	14	15
30	24	10	25	5.8	---	36	10	25	3.1	2.6	15	12
31	71	---	18	75	---	28	---	27	---	2.4	8.9	---
TOTAL	506.6	801.7	1369.4	1160.0	1713	2130	690.4	568.2	417.7	143.3	148.4	622.7
MEAN	16.3	26.7	44.2	37.4	61.2	69.0	23.0	18.3	13.9	4.62	4.79	20.8
MAX	96	133	196	292	205	254	41	44	44	15	42	90
MIN	2.4	6.2	5.4	5.1	13	18	9.4	8.4	3.1	2.3	1.3	3.3
CFSM	3.01	4.93	8.16	6.90	11.3	12.7	4.24	3.38	2.57	.85	.88	3.84
IN.	3.48	5.50	9.40	7.96	11.75	14.67	4.74	3.90	2.87	.98	1.02	4.27
AC-FT	1000	1590	2720	2300	3400	4240	1370	1130	829	284	294	1240

WTR YR 1977 TOTAL 10279.4 MEAN 28.2 MAX 292 MIN 1.3 CFSM 5.20 IN 70.54 AC-FT 20390

SAIL RIVER BASIN

12043190 SAIL RIVER NEAR NEAH BAY, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to November 1977 (discontinued).

WATER QUALITY DATA, OCTOBER 1976 TO NOVEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)
NOV , 1976									
16...	1230	83	56	6.8	12.2	2	10.8	--	--
17...	1505	159	--	--	--	--	--	410	B19
JAN , 1977									
17...	1400	141	48	7.7	8.0	6	11.9	--	--
18...	1300	282	--	--	--	--	--	B150	<1
MAR									
22...	1235	34	47	7.0	7.2	1	11.5	--	--
NOV									
02...	1100	151	50	7.5	8.0	1	10.3	--	--
03...	1104	80	--	--	--	--	--	120	<3

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
NOV , 1976									
16...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JAN , 1977									
17...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--
MAR									
22...	--	--	--	--	--	--	--	--	--
NOV									
02...	12	2	3.5	.8	4.5	.4	12	0	10
03...	--	--	--	--	--	--	--	--	--

DATE	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
NOV , 1976									
16...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JAN , 1977									
17...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--
MAR									
22...	--	--	--	--	--	--	--	--	--
NOV									
02...	.6	4.7	3.5	.63	.05	.15	.20	.83	3.7
03...	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12045000 LAKE MILLS AT GLINES CANYON, NEAR PORT ANGELES, WA

LOCATION.--Lat 48°00'08", long 123°35'55", in SW¼SE¼ sec.17, T.29 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Park, at Glines Canyon Dam on Elwha River 2 mi (3.2 km) upstream from Griff Creek, 4.1 mi (6.6 km) south of Elwha, and 11 mi (17.7 km) southwest of Port Angeles.

DRAINAGE AREA.--245 mi² (635 km²).

PERIOD OF RECORD.--April 1927 to current year. Prior to October 1950 monthly change in contents, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 19.67 ft (6.00 m) below mean sea level.

REMARKS.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Total capacity, 37,790 acre-ft (46.6 hm³) at gage height 608 ft (185.3 m), top of gates. Dead storage below gage height 579 ft (176.5 m), 26,000 acre-ft (32.1 hm³). Figures given herein represent total contents. Water is used for power by Crown Zellerbach Corp.

COOPERATION.--Gage height record furnished by Crown Zellerbach Corp.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 39,940 acre-ft (49.2 hm³) Dec. 22, 1936, gage height, 613.0 ft (186.84 m); minimum observed since reservoir first filled in May 1927, 24,290 acre-ft (29.9 hm³) Nov. 14, 1929, gage height, 574.4 ft (175.08 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39, 037 acre-ft (48.1 hm³) June 19, gage height, 610.9 ft (186.20 m); minimum observed, 35,229 acre-ft (43.4 hm³) Nov. 14, 15, gage height, 601.9 ft (183.46 m).

MONTHEND GAGE HEIGHTS AND CONTENTS AT 2400 WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	609.9	38,607	-
Oct. 31	608.8	38,134	-473
Nov. 30	604.6	36,362	-1,772
Dec. 31	610.0	38,650	+2,288
CAL YR 1976	-	-	+473
Jan. 31	609.8	38,564	-86
Feb. 28	607.7	37,664	-900
Mar. 31	605.8	36,866	-798
Apr. 30	609.3	38,349	+1,483
May 31	609.8	38,564	+215
June 30	608.9	38,177	-387
July 31	610.0	38,650	+473
Aug. 31	609.1	38,263	-387
Sept. 30	605.7	36,824	-1,439
WTR YR 1977	-	-	-1,783

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°03'18", long 123°34'55", in NE¼NW¼ sec.33, T.30 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Forest, on right bank 300 ft (91 m) upstream from site of McDonald Bridge (now removed), 0.7 mi (1.1 km) upstream from Little River, 8 mi (12.9 km) southwest of Port Angeles, and at mile 8.6 (13.8 km).

DRAINAGE AREA.--269 mi² (697 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-October 1897 to December 1901, October 1918 to current year. Published as "at McDonald" 1897-1901.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1286: 1898, 1899(M), 1900-1902, 1919, 1920-31(M) 1932, 1933(M). WSP 1566: 1957(m).

GAGE.--Water-stage recorder. Datum of gage is 200.00 ft (60.960 m) above mean sea level. Oct. 1, 1897, to Dec. 31, 1901, nonrecording gage at McDonald Bridge at different datum. Dec. 9, 1918, to May 1, 1936, water-stage recorder under McDonald Bridge at datum 7.4 ft (2.26 m) higher.

REMARKS.--Water-discharge records good. Water is diverted through Glines Canyon powerhouse and returned to river above gage. Flow partly regulated by Lake Mills 4.9 mi (7.9 km) upstream (see sta 12045000).

AVERAGE DISCHARGE.--63 years (water years 1898-1901, 1919-1977), 1,511 ft³/s (42.79 m³/s), 76.28 in/yr (1,938 mm/yr), 1,095,000 acre-ft/yr (1,350 hm³/yr) adjusted for storage since April 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,600 ft³/s (1,180 m³/s) Nov. 18, 1897, gage height, 14.5 ft (4.42 m), from graph based on gage readings, site and datum then in use, from rating curve extended above 3,300 ft³/s (93.5 m³/s) on basis of two determinations of flow over dam at discharge 26,700 ft³/s (756 m³/s) and 30,100 ft³/s (852 m³/s), referred to 1897 datum; minimum daily, 10 ft/s (0.28 m³/s) Oct. 3, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,340 ft³/s (151 m³/s) Jan. 18, gage height, 13.56 ft (4.133 m); minimum, 206 ft³/s (5.83 m³/s) July 4, gage height, 8.61 ft (2.624 m); minimum daily, 365 ft³/s (10.3 m³/s) Oct. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	602	884	480	709	620	946	710	1820	1610	1150	674	560
2	656	872	471	668	595	954	836	1930	1670	1100	728	555
3	668	806	426	649	475	945	818	2250	1250	872	716	662
4	480	674	405	605	511	1000	770	1960	1590	662	722	720
5	510	566	398	577	546	976	614	1640	1730	770	752	656
6	560	530	397	588	575	878	728	1530	1860	848	734	530
7	495	525	393	520	542	1090	1060	1380	2880	806	690	530
8	515	485	415	500	450	2130	1880	1270	2430	778	632	530
9	485	440	535	509	530	1690	1590	1140	1710	778	555	572
10	490	440	567	483	872	1460	1260	1180	1570	782	626	520
11	520	440	600	476	936	1210	1180	1450	1590	860	638	505
12	485	420	520	438	1440	1100	1060	1520	1630	914	595	490
13	500	405	481	474	1470	984	1010	1380	1620	830	620	450
14	415	415	502	544	1080	884	1000	1360	1540	782	674	420
15	465	450	494	454	824	770	968	1340	1520	758	644	420
16	465	490	569	489	710	746	944	1060	1570	794	590	422
17	465	584	589	1200	752	764	854	914	1590	796	602	425
18	455	698	569	3870	884	770	776	944	1700	800	584	420
19	470	764	628	1650	872	716	782	952	1830	740	584	455
20	505	710	450	1120	920	716	818	1010	1700	680	560	920
21	410	720	445	1120	1270	716	818	1140	1490	662	545	1090
22	375	722	490	885	1700	632	860	1170	1580	668	545	836
23	365	674	520	754	1360	632	1190	1170	1430	650	550	776
24	410	578	494	726	1110	626	1750	1180	1390	650	722	812
25	450	626	490	650	884	608	2080	1130	1390	660	1250	764
26	555	584	2980	650	1030	686	2180	1150	1380	770	1180	704
27	438	460	1930	650	1020	692	1840	1150	1240	764	836	614
28	505	385	1320	621	1020	662	1560	1110	1170	788	620	460
29	602	420	976	550	---	674	1710	1060	1170	728	620	515
30	600	435	815	506	---	692	1850	1020	1150	662	722	520
31	698	---	770	542	---	644	---	1020	---	662	596	---
TOTAL	15614	17210	21107	24205	24998	28793	35496	40330	47660	24154	21074	17867
MEAN	504	574	681	781	893	929	1183	1301	1589	779	680	596
MAX	698	884	2980	3870	1700	2130	2180	2250	2880	1150	1250	1090
MIN	365	385	393	438	450	608	614	914	1150	650	545	420
AC-FT	30970	34140	41870	48010	49580	57110	70410	79990	94530	47910	41800	35440
†	-473	-1,772	+2,288	-86	-900	-798	+1,483	+215	-387	+473	-387	-1,439
MEAN‡	496	544	718	779	877	916	1,208	1,304	1,582	787	673	572
CFSM‡	1.84	2.02	2.67	2.90	3.26	3.41	4.49	4.85	5.88	2.93	2.50	2.13
IN‡	2.13	2.26	3.08	3.34	3.39	3.92	5.01	5.59	6.56	3.37	2.89	2.37
AC-FT‡	30,500	32,370	44,160	47,920	48,680	56,310	71,890	80,200	94,140	48,380	41,410	34,000

CAL YR 1976: TOTAL 516,801 MEAN 1,412 MAX 6,750 MIN 365 AC-FT 1,025,000
DO.....: MEAN‡ 1,412 CFSM‡ 5.25 IN‡ 71.44 AC-FT‡ 1,025,000
WTR YR 1977: TOTAL 318,508 MEAN 873 MAX 3,870 MIN 365 AC-FT 631,800
DO.....: MEAN‡ 870 CFSM‡ 3.23 IN‡ 43.91 AC-FT‡ 630,000

† Change in contents, in acre-feet, in Lake Mills.
‡ Adjusted for change in contents in Lake Mills.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962-70, 1972 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 1976 to August 1977 (discontinued).

INSTRUMENTATION.--Temperature recorder since April 1976.

REMARKS.--Interruptions in the record due to malfunctions of the instrument. Prior to 1962 published as "Elwha River near Port Angeles". 1972 to 1974 published as "12045560 Elwha River below Little River near Port Angeles".

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 18.0°C Aug. 3, 4, 17, 1977, minimum recorded, 2.0°C Jan. 7-10, 13-17, 19, 20, 30, 31, Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: During period Oct. 1 to Aug. 30, maximum recorded, 18.0°C Aug. 3, 4, 17; minimum recorded, 2.0°C Jan. 7-10, 13-17, 19, 20, 30, 31, Feb. 1.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL COLIFORM ,7UM-MF (COL./100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)
OCT										
26...	1145	972	80	6.6	9.1	1	20	<1	--	8
DEC										
01...	0900	435	80	7.1	4.9	1	820	--	<1	--
27...	0945	1260	86	7.0	4.6	2	59	--	82	--
JAN										
26...	1015	650	70	7.0	2.6	2	33	--	1	--
MAR										
01...	1000	1030	82	7.0	4.4	2	32	--	860	--
28...	1030	704	90	7.1	5.4	3	46	--	<1	--
APR										
22...	1330	672	100	7.0	8.5	2	16	--	<1	--
MAY										
26...	0930	1140	82	7.4	8.0	1	<1	--	<1	--
JUN										
30...	0930	1170	65	7.0	11.7	1	110	--	<1	--
JUL										
25...	1200	660	81	7.0	14.3	1	11	--	<1	--
AUG										
31...	1200	566	77	7.2	13.6	1	60	--	2	--
SEP										
21...	1030	1100	81	7.2	12.4	1	290	--	6	--

DATE	FECAL STREPTOCOCCI KF AGAR (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
OCT									
26...	--	42	7	15	1.2	2.1	.1	43	35
DEC									
01...	<1	40	3	14	1.3	1.9	.1	45	37
27...	80	45	8	15	1.8	2.1	.1	45	37
JAN									
26...	3	40	7	14	1.2	1.8	.1	40	33
MAR									
01...	<1	37	3	13	1.1	2.2	.2	41	34
28...	<1	44	8	15	1.7	2.6	.2	44	36
APR									
22...	<1	45	8	16	1.3	2.5	.2	45	37
MAY									
26...	3	39	6	14	1.0	2.1	.1	40	33
JUN									
30...	1	31	5	11	.8	2.1	.1	32	26
JUL									
25...	10	37	6	13	1.0	1.8	.1	37	30
AUG									
31...	--	52	21	19	1.1	2.4	.2	39	31
SEP									
21...	12	40	8	14	1.1	1.9	.2	39	32

B Results based upon colony counts outside the ideal range.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT									
26...	17	7.9	.6	.0	5.1	63	53	13	.00
DEC									
01...	5.7	8.7	.8	.1	4.6	51	54	6	.01
27...	7.2	8.4	1.1	.1	5.7	60	56	0	.04
JAN									
26...	6.4	8.2	2.1	.1	5.4	59	53	0	.03
MAR									
01...	6.6	8.6	.8	.0	5.0	50	51	0	.03
28...	5.6	9.7	1.3	.1	6.3	60	59	4	.00
APR									
22...	7.2	7.5	1.5	.0	6.3	57	58	10	.00
MAY									
26...	2.5	7.5	.9	.0	5.3	46	51	1	.01
JUN									
30...	5.1	6.2	.8	.0	4.6	45	41	1	.00
JUL									
25...	5.9	6.1	.9	.0	4.9	45	46	22	.00
AUG									
31...	3.8	8.4	.8	.1	9.2	52	56	0	.01
SEP									
21...	3.9	5.9	1.1	.1	5.1	49	49	8	.01

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT									
26...	.00	.00	.02	.09	.01	.01	1	1.5	88
DEC									
01...	.00	.01	.01	.09	.01	.00	1	1.2	93
27...	.00	.04	.02	.13	.01	.00	2	6.8	73
JAN									
26...	.01	.04	.04	.09	.01	.00	4	7.0	92
MAR									
01...	.00	.03	.02	.10	.00	.00	1	2.8	99
28...	.01	.01	.04	.14	.01	.00	2	3.8	89
APR									
22...	.00	.00	.03	.07	.01	.01	2	4.7	67
MAY									
26...	.00	.01	.02	.18	.01	.00	2	6.2	73
JUN									
30...	.00	.00	.03	.07	.01	.00	1	3.2	98
JUL									
25...	.00	.00	.03	.08	.00	.00	3	5.4	90
AUG									
31...	.00	.01	.05	.09	.01	.00	3	4.6	89
SEP									
21...	.00	.01	.02	.06	.01	.01	2	5.9	96

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT												
26...	1145	0	0	<10	0	0	0	<50	0	10	1	60
JAN												
26...	1015	0	0	<10	0	0	0	<50	0	<10	3	240
APR												
22...	1330	0	0	<10	1	0	0	50	0	<10	5	80
JUL												
25...	1200	0	0	<10	1	0	0	<50	0	10	3	260

DATE	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT												
26...	30	<100	1	10	0	--	.0	0	0	10	10	.5
JAN												
26...	10	<100	0	0	0	.0	.0	0	0	20	30	.8
APR												
22...	10	<100	3	10	10	.0	.0	0	0	20	20	1.3
JUL												
25...	20	<100	9	4	0	.0	.0	0	0	10	4	1.5

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TOTAL ALDRIN (UG/L)	TOTAL ATRA-ZINE (UG/L)	TOTAL CHLOR-DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)
MAR 01...	1000	ND	ND	ND	ND	ND	ND	ND
MAY 26...	0930	ND	ND	ND	ND	ND	ND	ND
AUG 31...	1200	ND	ND	ND	ND	ND	ND	ND

DATE	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA-THION (UG/L)	TOTAL METH-OXY-CHLOR (UG/L)	TOTAL METHYL PARA-THION (UG/L)
MAR 01...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 26...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 31...	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	TOTAL METHYL TRI-THION (UG/L)	TOTAL PARA-THION (UG/L)	SIMA-ZINE TOTAL((UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL TRI-THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
MAR 01...	ND	ND	ND	ND	ND	ND	ND	ND
MAY 26...	ND	ND	ND	ND	ND	ND	ND	ND
AUG 31...	ND	ND	ND	ND	ND	ND	ND	ND

ND None detected.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	OCT 26,76		DEC 1,76		DEC 27,76		JAN 26,77		MAY 26,77	
TIME	1145		0900		0945		1015		0930	
TOTAL CELLS/ML	210		8		90		58		160	
DIVERSITY: DIVISION	0.0		0.0		0.2		0.0		0.4	
.CLASS	0.0		0.0		0.2		0.4		0.4	
..ORDER	0.8		0.0		0.6		1.3		0.8	
...FAMILY	1.5		0.0		2.7		2.6		3.0	
....GENUS	1.5		0.0		3.0		2.8		3.3	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	--	-	11	7
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	3	2
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	150#	73	--	-	7	8	19#	33	8	5
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	4	4	5	8	22	14
....COCCONEIS	--	-	--	-	7	8	5	8	3	2
....RHOICOSPHENIA	--	-	--	-	4	4	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	14#	16	--	-	11	7
....EPITHEMIA	--	-	--	-	*	0	--	-	--	-
...DIATOMACEAE										
....DIATOMA	10	5	--	-	4	4	--	-	22	14
...FRAGILARIACEAE										
....ASTERIONELLA	10	5	--	-	25#	28	--	-	31#	19
....FRAGILARIA	--	-	--	-	--	-	10#	17	--	-
....HANNAEA	--	-	--	-	--	-	--	-	6	3
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	19	9	--	-	14#	16	5	8	33#	20
...NAVICULACEAE										
....DIPLONEIS	--	-	--	-	--	-	--	-	3	2
....NAVICULA	10	5	8#	100	7	8	5	8	6	3
....STAURONEIS	--	-	--	-	--	-	--	-	3	2
...NITZSCHIACEAE										
....NITZSCHIA	10	5	--	-	--	-	5	8	3	2
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	-	--	-	--	-	--	-	--	-
....OCHROMONAS	--	-	--	-	--	-	5	8	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	4	4	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%
SAMPLING METHOD --EDI

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	JUN 30,77 0930	JUL 29,77 1700	AUG 31,77 1200	SEP 21,77 1030
TOTAL CELLS/ML	420	48	20	140
DIVERSITY: DIVISION	0.7	0.0	0.0	0.9
.CLASS	0.9	0.0	0.0	1.4
..ORDER	1.0	0.5	0.0	1.7
...FAMILY	1.0	0.9	1.9	2.1
....GENUS	1.1	1.6	1.9	2.2

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...SCENEDESMACEAE								
....SCENEDESMUS	--	*	--	*	--	*	18	13
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	*	--	*	--	*	--	*
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	20	5	--	*	--	*	9	6
....STEPHANODISCUS	--	*	5	10	--	*	--	*
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	*	--	*	--	*	--	*
....COCCONEIS	--	*	--	*	8	40	9	6
....RHOICOSPHENIA	--	*	--	*	--	*	--	*
...CYMBELLACEAE								
....CYMBELLA	--	*	--	*	--	*	--	*
....EPITHEMIA	--	*	--	*	--	*	--	*
...DIATOMACEAE								
....DIATOMA	--	*	--	*	--	*	--	*
...FRAGILARIACEAE								
....ASTERIONELLA	--	*	29	60	--	*	48	34
....FRAGILARIA	--	*	--	*	--	*	--	*
....HANNAEA	5	1	--	*	--	*	--	*
....SYNEDRA	10	2	10	20	4	20	4	3
...GOMPHONEMATACEAE								
....GOMPHONEMA	5	1	--	*	4	20	4	3
...NAVICULACEAE								
....DIPLONEIS	--	*	--	*	--	*	--	*
....NAVICULA	--	*	--	*	4	20	--	*
....STAURONEIS	--	*	--	*	--	*	--	*
...NITZSCHIACEAE								
....NITZSCHIA	--	*	5	10	--	*	--	*
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....DINOBRYON	40	10	--	*	--	*	48	34
....OCHROMONAS	--	*	--	*	--	*	--	*
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	340	81	--	*	--	*	--	*
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...PERIDINIACEAE								
....PERIDINIUM	--	*	--	*	--	*	--	*

NOTE: # - DOMINANT ORGANISM, EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
SAMPLING METHOD - [illegible]

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	---	---	---	6.0	5.0	5.5	4.0	3.5	3.5
2	---	---	---	---	---	---	6.0	5.0	5.5	4.0	4.0	4.0
3	---	---	---	9.5	8.5	9.0	5.5	5.0	5.5	4.0	3.5	3.5
4	---	---	---	9.5	8.5	9.0	5.5	5.0	5.5	3.5	3.0	3.5
5	---	---	---	9.0	8.5	9.0	5.5	5.0	5.5	3.5	3.0	3.5
6	---	---	---	9.0	8.5	9.0	6.0	5.0	5.5	3.5	3.0	3.5
7	---	---	---	9.5	8.5	9.0	6.5	5.5	6.0	3.5	2.0	3.0
8	---	---	---	9.0	8.5	9.0	6.5	6.0	6.0	3.0	2.0	2.0
9	11.5	10.5	11.0	9.0	8.5	9.0	---	---	---	3.0	2.0	2.0
10	11.5	10.5	11.0	9.0	8.0	8.5	---	---	---	3.0	2.0	2.0
11	12.0	10.0	11.0	9.0	8.0	8.5	---	---	---	3.0	3.0	3.0
12	---	---	---	9.0	8.0	8.5	---	---	---	3.5	3.0	3.5
13	---	---	---	8.5	8.0	8.0	---	---	---	3.0	2.0	2.0
14	---	---	---	8.5	8.0	8.0	---	---	---	3.0	2.0	2.0
15	---	---	---	9.0	8.0	8.5	---	---	---	3.0	2.0	2.0
16	---	---	---	9.5	8.5	9.0	---	---	---	3.0	2.0	2.0
17	---	---	---	9.5	8.5	9.0	---	---	---	3.0	2.0	2.0
18	---	---	---	9.0	8.5	9.0	---	---	---	3.0	3.0	3.0
19	---	---	---	9.0	8.5	9.0	---	---	---	3.0	2.0	2.0
20	---	---	---	9.0	8.0	8.5	---	---	---	3.5	2.0	3.0
21	---	---	---	9.0	8.0	8.5	---	---	---	3.5	3.0	3.5
22	---	---	---	8.5	8.0	8.0	---	---	---	3.5	3.0	3.5
23	---	---	---	8.5	8.0	8.0	---	---	---	3.5	3.0	3.5
24	---	---	---	8.5	8.0	8.0	---	---	---	3.5	3.0	3.5
25	---	---	---	8.5	7.0	8.0	---	---	---	3.5	3.0	3.5
26	---	---	---	8.0	6.5	7.0	---	---	---	3.5	3.0	3.5
27	---	---	---	7.0	6.0	6.5	---	---	---	3.5	3.0	3.5
28	---	---	---	7.0	6.0	6.5	4.5	4.5	4.5	3.5	3.0	3.5
29	---	---	---	6.5	5.5	6.0	4.5	4.0	4.5	3.5	3.0	3.5
30	---	---	---	6.0	5.0	5.5	4.0	3.5	3.5	3.5	2.0	3.0
31	---	---	---	---	---	---	4.0	3.5	3.5	3.5	2.0	3.0
MONTH	---	---	---	9.5	5.0	8.0	6.5	3.5	5.0	4.0	2.0	3.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	2.0	3.0	5.0	4.5	4.5	7.0	4.5	5.5	8.5	7.0	8.0
2	3.5	3.0	3.5	5.0	4.0	4.5	6.5	4.5	5.5	8.5	7.0	8.0
3	4.0	3.0	3.5	5.5	4.0	4.5	7.0	4.5	5.5	8.5	7.0	8.0
4	4.0	3.0	3.5	5.0	4.0	4.5	7.0	5.0	6.0	8.0	6.5	7.0
5	4.0	3.0	3.5	5.5	4.0	4.5	8.5	5.0	6.5	8.0	6.0	6.5
6	4.0	3.0	3.5	4.5	4.0	4.5	8.5	5.5	6.5	8.5	6.5	8.0
7	4.0	3.0	3.5	4.5	4.5	4.5	8.5	5.5	6.5	9.0	6.5	8.0
8	4.0	3.5	3.5	4.5	4.5	4.5	8.5	5.5	6.0	9.0	6.5	8.0
9	4.5	3.5	4.0	4.5	4.0	4.5	7.0	5.5	6.5	9.0	6.0	8.0
10	4.5	4.0	4.5	5.0	4.0	4.5	7.0	5.5	6.5	8.0	6.5	7.0
11	4.5	4.0	4.5	5.0	4.0	4.5	7.0	5.0	6.0	8.0	6.0	6.5
12	4.5	4.0	4.5	4.5	4.0	4.5	7.0	5.5	6.5	8.0	6.0	6.5
13	4.5	4.0	4.5	4.5	3.5	4.0	7.0	5.5	6.5	7.0	6.5	6.5
14	5.0	4.0	4.5	4.5	4.0	4.5	7.0	5.5	6.5	8.0	6.5	7.0
15	5.0	4.0	4.5	4.5	3.5	4.0	7.0	5.5	6.5	8.5	6.5	8.0
16	5.5	4.0	4.5	5.0	3.5	4.5	7.0	5.0	6.0	7.0	6.5	6.5
17	5.0	4.0	4.5	5.0	3.5	4.5	7.0	5.0	6.0	8.5	6.0	7.0
18	4.5	4.0	4.5	5.0	4.0	4.5	7.0	5.0	6.0	9.0	6.5	8.0
19	5.0	4.0	4.5	5.0	4.0	4.5	7.0	5.0	6.0	8.5	6.5	8.0
20	5.0	4.5	4.5	5.0	4.0	4.5	8.0	5.0	6.5	8.5	6.5	8.0
21	5.0	4.5	4.5	5.5	4.0	4.5	7.0	5.5	6.5	8.5	7.0	8.0
22	5.0	4.5	4.5	6.5	4.5	5.5	8.5	6.0	7.0	9.0	7.0	8.0
23	5.0	4.0	4.5	5.5	4.5	5.0	8.5	6.0	7.0	8.0	7.0	8.0
24	5.5	4.0	4.5	6.0	4.5	5.5	8.5	6.5	8.0	8.5	7.0	8.0
25	4.5	4.5	4.5	6.0	4.0	5.0	8.0	6.5	7.0	9.0	7.0	8.0
26	5.0	4.5	4.5	5.5	4.5	5.0	8.0	6.5	7.0	---	---	---
27	5.0	4.5	4.5	6.0	4.5	5.5	8.5	6.0	7.0	---	---	---
28	5.5	4.5	5.0	6.5	4.5	5.5	8.5	6.0	7.0	---	---	---
29	---	---	---	6.0	4.5	5.5	8.5	6.5	8.0	---	---	---
30	---	---	---	6.5	4.0	5.5	8.5	6.5	8.0	---	---	---
31	---	---	---	6.0	4.5	5.5	---	---	---	---	---	---
MONTH	5.5	2.0	4.0	6.5	3.5	4.5	8.5	4.5	6.5	9.0	6.0	7.5

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	8.0	8.5	12.0	10.5	11.0	15.5	12.0	14.0			
2	9.0	7.0	8.0	12.0	10.5	11.0	15.5	12.0	14.0			
3	8.5	7.0	8.0	11.5	10.5	11.0	18.0	12.0	15.0			
4	8.5	7.0	8.0	12.0	10.0	11.0	18.0	12.0	15.0			
5	9.5	8.0	9.0	11.5	10.5	11.0	15.5	13.0	14.5			
6	9.5	8.0	9.0	13.0	10.0	11.0	15.5	13.0	14.5			
7	9.5	8.5	9.0	13.0	10.5	11.5	15.5	13.0	14.5			
8	9.5	8.5	9.0	12.0	10.5	11.0	16.0	12.0	14.5			
9	10.0	8.5	9.0	13.0	10.5	11.5	16.5	13.0	14.5			
10	10.0	8.5	9.0	13.0	10.5	11.5	16.0	13.0	14.5			
11	---	---	---	12.0	11.0	11.5	16.0	13.5	14.5			
12	---	---	---	13.5	11.0	12.0	16.5	13.5	15.0			
13	---	---	---	14.0	11.0	12.0	16.0	13.5	14.5			
14	---	---	---	14.0	11.0	12.0	16.0	13.5	14.5			
15	---	---	---	14.0	11.0	12.0	16.5	13.5	15.0			
16	11.5	10.0	11.0	12.0	11.5	12.0	16.5	13.5	15.0			
17	11.5	10.0	11.0	14.0	11.5	13.0	18.0	13.5	15.5			
18	11.5	10.0	11.0	14.0	11.0	12.0	15.5	13.5	14.5			
19	11.5	10.5	11.0	14.0	11.0	12.0	16.5	14.0	15.5			
20	11.5	10.5	11.0	14.5	11.0	13.0	16.5	13.5	15.0			
21	12.0	10.5	11.0	14.5	11.5	13.5	15.0	14.0	14.5			
22	12.0	10.5	11.0	14.5	11.0	13.0	16.5	13.5	15.0			
23	12.0	10.5	11.0	15.0	11.5	13.5	14.5	14.0	14.5			
24	11.0	10.5	11.0	15.0	11.5	13.5	15.0	14.0	14.5			
25	12.0	10.5	11.0	14.5	11.5	13.5	14.5	14.0	14.5			
26	12.0	10.5	11.0	14.5	11.0	13.0	15.0	13.5	14.5			
27	12.0	10.5	11.0	14.5	11.5	13.5	14.5	13.5	14.0			
28	11.5	10.5	11.0	13.0	11.5	12.0	14.5	13.5	14.0			
29	12.0	10.5	11.0	14.0	11.5	13.0	14.0	13.0	13.5			
30	13.0	10.5	11.5	16.5	11.5	14.5	15.0	13.0	14.0			
31	---	---	---	15.0	11.5	13.5	---	---	---			
MONTH	13.0	7.0	10.0	16.5	10.0	12.0	18.0	12.0	14.5			
YEAR	18.0	2.0	8.0									

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
OCT							
26...	1145	--	.538	.692	--	--	29
JUN							
30...	0930	5143	2.39	2.75	.015	.070	35
JUL							
25...	1200	11470	2.60	2.99	.019	.034	26

Sampling Method: Polyethylene strip.

12048000 DUNGENESS RIVER NEAR SEQUIM, WA

LOCATION.--Lat 48°00'52", long 123°07'53", in NW¼NE¼ sec.13, T.29 N., R.4 W., Clallam County, Hydrologic Unit 17110020, on right bank 1.0 mi (1.6 km) upstream from Canyon Creek, 4.8 mi (7.7 km) southwest of Sequim, and at mile 11.8 (19.0 km).

DRAINAGE AREA.--156 mi² (404 km²).

PERIOD OF RECORD.--June 1923 to September 1930, June 1937 to current year. July 1897 to July 1898 at site below Canyon Creek, published as "near Sequim", records not equivalent.

REVISED RECORDS.--WSP 1316: 1924-25(M), 1927(M). WSP 1932: 1957, 1958-59(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 569.3 ft (173.52 m) above mean sea level (river-profile survey). June 8, 1923, to Sept. 30, 1930, nonrecording gage just above fish-hatchery diversion 0.5 mi (0.8 km) downstream at different datum. June 19 to Aug. 12, 1937, nonrecording gage at present site and datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--47 years (water years 1924-30, 1938-77), 390 ft³/s (11.04 m³/s), 33.95 in/yr (862 mm/yr), 282,600 acre-ft/yr (348 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s (193 m³/s) Nov. 27, 1949, gage height, 8.58 ft (2.615 m) from floodmarks, from rating extended above 2,000 ft³/s (56.6 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 68 ft³/s (1.93 m³/s) Dec. 9, 10, 1972, during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 7	0200	*973	27.6	*4.58	1.396

Minimum daily discharge, 76 ft³/s (2.15 m³/s) Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	170	153	100	111	100	126	98	418	544	318	209	162
2	165	128	97	111	98	119	100	432	397	308	209	157
3	160	121	95	107	98	121	109	445	335	272	214	180
4	150	117	93	95	98	115	141	365	350	256	214	183
5	146	115	91	86	98	111	193	318	436	245	217	185
6	141	111	90	84	97	121	284	281	680	233	206	170
7	134	109	91	82	97	268	361	265	849	219	196	157
8	132	107	102	80	95	308	427	265	729	230	185	150
9	134	111	98	78	93	297	346	275	522	245	185	143
10	146	111	90	76	130	211	281	318	465	230	185	139
11	143	107	88	86	124	172	245	301	465	247	185	134
12	139	106	88	91	172	155	225	275	460	268	180	130
13	132	102	87	87	196	137	225	256	455	230	193	128
14	128	100	87	85	146	124	209	247	436	219	196	128
15	124	111	93	85	126	117	203	239	432	222	190	128
16	119	111	119	85	119	109	203	233	427	228	183	134
17	113	185	104	172	115	106	190	228	455	230	175	128
18	111	185	97	597	111	104	180	233	505	219	177	137
19	107	153	90	318	106	102	175	230	500	201	170	262
20	106	134	90	222	126	98	167	265	450	196	167	281
21	104	130	88	183	177	98	165	332	414	203	172	230
22	102	122	88	155	160	102	201	358	441	211	172	196
23	100	117	91	139	132	113	268	350	389	209	203	190
24	109	115	84	132	119	113	365	308	389	203	236	190
25	134	119	93	124	119	107	516	275	405	214	308	177
26	115	104	405	117	113	106	527	284	358	225	321	172
27	107	92	281	113	109	109	414	256	339	228	228	160
28	126	100	188	107	115	104	377	239	339	225	193	177
29	124	102	155	104	---	100	385	228	343	206	188	172
30	111	102	134	104	---	97	405	222	308	193	219	157
31	165	---	121	104	---	97	---	297	---	281	180	---
TOTAL	3997	3580	3618	4120	3389	4167	7985	9038	13625	7134	6264	5037
MEAN	129	119	117	133	121	134	266	292	454	230	202	168
MAX	170	185	405	597	196	308	527	445	849	318	321	281
MIN	100	92	84	76	93	97	98	222	308	193	167	128
CFSM	.83	.76	.75	.85	.78	.86	1.71	1.87	2.91	1.47	1.30	1.08
IN.	.95	.85	.86	.98	.81	.99	1.90	2.16	3.25	1.70	1.49	1.20
AC-FT	7930	7100	7180	8170	6720	8270	15840	17930	27030	14150	12420	9990

CAL YR 1976 TOTAL 125714 MEAN 343 MAX 1220 MIN 84 CFSM 2.20 IN 29.98 AC-FT 249400
WTR YR 1977 TOTAL 71954 MEAN 197 MAX 849 MIN 76 CFSM 1.26 IN 17.16 AC-FT 142700

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW¼SW¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi (8.4 km) west of Brinnon and at mile 4.5 (7.2 km).

DRAINAGE AREA.--66.5 mi^2 (172 km^2).

PERIOD OF RECORD.--August to December 1910 (gage heights only), December 1910 to December 1911, June 1938 to current year. Published as "near Duckabush" 1910-11. Chemical analyses April 1972 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft (73.61 m) above mean sea level. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--39 years (water years 1939-77), 416 ft^3/s (11.78 m^3/s) 84.95 in/yr (2,158 mm/yr), 301,400 acre-ft/yr (372 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,960 ft^3/s (254 m^3/s) Nov. 26, 1949, gage height, 10.06 ft (3.066 m), from rating curve extended above 4,800 ft^3/s (136 m^3/s) on basis of slope-area measurement of peak flow; minimum, 45 ft^3/s (1.27 m^3/s) Oct. 26, 28, 29, 1942; minimum gage height, 1.32 ft (0.402 m) Sept. 30, 1939.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 26	1300	*1,360	38.5	*4.31	1.314

Minimum discharge, 51 ft^3/s (1.44 m^3/s) Oct. 23, 24, gage height, 1.37 ft (0.418 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	215	79	159	107	376	157	480	660	212	100	113
2	87	145	76	149	100	306	157	540	465	197	101	111
3	87	119	71	135	96	263	168	800	384	182	101	175
4	82	103	70	125	94	230	210	450	452	175	103	170
5	77	91	67	115	92	210	320	340	472	172	100	157
6	76	84	65	107	89	257	470	310	565	167	96	129
7	74	79	74	100	87	460	550	290	635	157	92	113
8	71	76	143	96	85	510	570	300	535	151	91	100
9	71	79	131	90	89	472	450	300	400	153	89	92
10	81	74	103	86	316	370	360	310	376	145	85	87
11	79	71	94	94	287	300	280	270	376	147	84	82
12	74	68	89	101	400	266	250	240	376	153	84	77
13	71	65	89	92	303	233	250	250	366	139	85	76
14	68	79	85	89	221	205	220	240	369	131	85	74
15	65	149	155	96	188	188	210	220	366	129	82	71
16	63	177	187	109	172	172	200	205	359	131	81	73
17	61	299	151	310	168	163	185	195	363	135	79	79
18	58	242	135	740	170	157	170	195	384	125	77	157
19	57	175	111	373	155	151	165	200	380	117	76	956
20	56	145	100	251	317	145	163	230	338	111	74	625
21	53	131	94	202	530	149	190	270	310	109	74	355
22	53	117	89	175	530	170	350	250	310	111	76	248
23	52	105	91	157	373	198	420	225	278	109	85	215
24	93	107	82	145	289	190	490	210	275	109	135	205
25	161	143	107	135	248	182	580	210	275	111	282	233
26	117	105	1020	127	218	178	630	380	251	113	269	221
27	91	92	625	121	221	202	480	300	239	111	163	187
28	103	89	345	113	433	182	420	310	236	107	137	192
29	109	85	260	107	---	168	450	300	233	103	147	185
30	89	82	210	103	---	159	440	280	207	98	175	170
31	292	---	177	109	---	157	---	620	---	98	135	---
TOTAL	2660	3591	5175	4911	6378	7369	9955	9720	11235	4208	3443	5728
MEAN	85.8	120	167	158	228	238	332	314	375	136	111	191
MAX	292	299	1020	740	530	510	630	800	660	212	282	956
MIN	52	65	65	86	85	145	157	195	207	98	74	71
CFSM	1.29	1.81	2.51	2.38	3.43	3.58	4.99	4.72	5.64	2.05	1.67	2.87
IN.	1.49	2.01	2.89	2.75	3.57	4.12	5.57	5.44	6.28	2.35	1.93	3.20
AC-FT	5280	7120	10260	9740	12650	14620	19750	19280	22280	8350	6830	11360

CAL YR 1976 TOTAL 101671 MEAN 278 MAX 1450 MIN 52 CFSM 4.18 IN 56.87 AC-FT 201700
WTR YR 1977 TOTAL 74373 MEAN 204 MAX 1020 MIN 52 CFSM 3.07 IN 41.60 AC-FT 147500

NOTE.--No gage-height record Apr. 4 to June 1.

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

LOCATION.--Lat 47°30'52", long 123°19'43", in NW¼ sec.4, T.23 N., R.5 W., Mason County, Hydrologic Unit 17110017, Olympic National Park, on left bank 1.2 mi (1.9 km) upstream from Lake Cushman, 2.8 mi (4.5 km) upstream from Dry Creek, 11.3 mi (18.2 km) northwest of Hoodsport, and at mile 29.2 (47.0 km).

DRAINAGE AREA.--57.2 mi² (148 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to current year.

REVISED RECORDS.--WSP 1286: 1932, 1935, 1937(M), 1942(M), 1947(P), 1948(M). WSP 1636: 1940(M). WSP 1736: 1927. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 762.26 ft (232.34 m) above mean sea level. Prior to Nov. 1, 1934, water-stage recorder, and Nov. 1, 1934, to Nov. 10, 1941, nonrecording gages, on right bank at same datum.

REMARKS.--Water discharge records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--53 years, 504 ft³/s (14.27 m³/s) 119.66 in/yr (3,039 mm/yr), 365,100 acre-ft/yr (450 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s (765 m³/s) Nov. 5, 1934, gage height, 14.4 ft (4.39 m), from high-water mark, from rating curve extended above 9,800 ft³/s (278 m³/s) on basis of slope-area measurement at gage height 12.2 ft (3.72 m); minimum recorded, 16 ft³/s (0.453 m³/s) Sept. 23, 1930, gage height, 1.12 ft (0.341 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,200 ft³/s (90.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 26	1000	*2,760	78.2	*5.39	1.643

Minimum discharge, 55 ft³/s (1.56 m³/s) Oct. 21, 22, 23, 24, gage height, 1.47 ft (0.448 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	299	110	269	214	509	239	664	937	223	97	113
2	89	198	106	253	192	421	235	736	640	211	95	179
3	86	162	102	229	180	369	255	1010	550	199	93	248
4	80	141	98	212	186	336	320	652	867	188	91	309
5	77	126	95	194	178	313	455	525	742	179	90	223
6	76	115	94	187	173	435	664	460	811	174	88	168
7	76	108	117	177	166	614	778	432	804	166	86	140
8	74	105	339	167	160	682	797	460	652	163	85	123
9	76	104	230	159	178	549	634	446	525	161	84	115
10	84	98	176	152	965	441	500	475	495	150	83	106
11	79	93	188	169	637	375	422	418	405	155	82	100
12	74	89	168	237	826	344	379	366	470	150	82	96
13	69	86	177	191	564	306	379	370	451	143	82	93
14	68	168	159	179	415	279	335	362	441	135	80	89
15	66	241	341	225	347	258	327	331	427	135	77	84
16	63	294	302	292	322	241	309	309	409	135	77	84
17	60	513	344	732	327	226	281	295	409	138	76	95
18	59	330	289	1220	335	219	264	292	413	126	72	211
19	58	250	232	608	288	213	251	302	387	119	71	1170
20	56	204	206	431	565	205	242	335	343	117	71	760
21	56	186	189	349	745	211	271	422	324	117	72	446
22	55	164	178	301	796	232	515	383	313	115	71	309
23	55	149	174	269	565	278	585	347	292	113	95	306
24	145	163	156	245	439	275	760	317	288	111	145	285
25	306	179	252	226	379	255	850	313	281	109	441	427
26	161	144	2150	213	338	275	700	575	258	107	255	317
27	110	130	960	199	384	335	620	441	251	105	143	258
28	119	124	553	188	604	288	595	475	245	103	155	248
29	108	120	429	178	---	261	628	441	239	101	168	229
30	93	115	349	171	---	242	622	422	223	99	193	199
31	590	---	301	234	---	239	---	895	---	98	133	---
TOTAL	3254	5198	9564	8856	11468	10226	14212	14271	13972	4345	3533	7530
MEAN	105	173	309	286	410	330	474	460	466	140	114	251
MAX	590	513	2150	1220	965	682	850	1010	937	223	441	1170
MIN	55	86	94	152	160	205	235	292	223	98	71	84
CFSM	1.84	3.02	5.40	5.00	7.17	5.77	8.29	8.04	8.15	2.45	1.99	4.39
IN.	2.12	3.38	6.22	5.76	7.46	6.65	9.24	9.28	9.09	2.83	2.30	4.90
AC-FT	6450	10310	18970	17570	22750	20280	28190	28310	27710	8620	7010	14940

CAL YR 1976 TOTAL 145177 MEAN 397 MAX 2150 MIN 55 CFSM 6.94 IN 94.42 AC-FT 288000
WTR YR 1977 TOTAL 106429 MEAN 292 MAX 2150 MIN 55 CFSM 5.11 IN 69.21 AC-FT 211100

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1965 to current year.

INSTRUMENTATION.--Temperature recorder since April 1965.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 12, 13, 15-17, 1977; minimum (1965-67, 1968-77), 0.0°C Mar. 24, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 12, 13, 15-17; minimum, 1.5°C Jan. 9, 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
16...	1110	299	73	7.5	5.9	0	12.9	86	.00	.00
APR										
15...	1030	324	80	7.3	4.3	0	12.8	3	.04	.00
JUN										
16...	0945	396	76	7.2	7.0	0	11.6	>20000	.01	.00
SEP										
15...	1030	84	91	7.3	10.0	0	11.1	820	.00	.01

B Results based upon colony counts outside the ideal range.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	9.0	9.5	7.0	6.0	6.5	4.0	3.5	3.5	3.5	3.0	3.5
2	10.0	9.0	9.5	6.5	6.0	6.0	4.0	3.5	4.0	3.0	3.0	3.0
3	9.0	8.5	8.5	7.0	6.5	6.5	4.0	4.0	4.0	3.0	3.0	3.0
4	9.0	8.0	8.5	6.5	6.0	6.5	4.5	4.0	4.0	3.5	3.0	3.0
5	9.5	8.0	8.5	7.0	6.0	6.5	4.5	4.0	4.0	3.0	2.0	2.5
6	9.5	8.0	8.5	6.5	6.0	6.5	5.0	4.0	4.5	2.0	2.0	2.0
7	9.5	8.0	8.5	7.0	6.5	7.0	5.0	4.5	5.0	2.0	2.0	2.0
8	9.5	8.5	9.0	7.5	7.0	7.5	5.5	4.5	5.0	2.0	2.0	2.0
9	9.5	8.5	9.0	7.5	7.0	7.0	4.5	4.0	4.5	2.0	1.5	1.5
10	9.5	9.0	9.0	7.0	6.5	6.5	5.0	4.5	4.5	2.0	1.5	1.5
11	9.5	8.5	9.0	7.0	6.5	6.5	5.0	4.5	5.0	2.5	2.0	2.5
12	9.5	8.0	8.5	6.5	6.0	6.5	5.0	4.5	4.5	3.0	2.5	2.5
13	9.0	7.5	8.0	6.5	5.5	6.0	5.0	5.0	5.0	3.5	3.0	3.0
14	9.0	8.0	8.5	6.5	6.0	6.5	5.5	5.0	5.5	3.5	3.5	3.5
15	8.5	7.5	7.5	6.5	6.0	6.5	6.0	5.5	5.5	3.5	3.5	3.5
16	8.0	7.0	7.5	7.5	6.5	7.0	6.0	5.5	5.5	3.5	3.5	3.5
17	7.5	6.5	7.0	7.5	6.5	7.0	6.0	5.5	6.0	4.5	3.5	4.0
18	7.0	6.0	6.5	6.5	6.0	6.0	5.0	4.5	4.5	5.0	4.5	4.5
19	7.0	6.0	6.5	6.0	6.0	6.0	4.0	3.5	4.0	4.5	4.5	4.5
20	7.0	6.0	6.5	6.0	5.0	5.5	4.5	3.5	4.0	4.5	4.0	4.5
21	7.0	6.0	6.5	6.0	5.5	6.0	5.0	4.5	4.5	4.5	4.5	4.5
22	7.0	6.0	6.5	6.0	5.5	5.5	5.0	4.5	5.0	4.5	4.0	4.0
23	7.5	6.5	7.0	6.0	5.0	5.5	5.0	4.0	4.5	4.0	3.5	3.5
24	7.0	7.0	7.0	6.5	6.0	6.0	4.0	3.5	4.0	3.5	3.5	3.5
25	7.5	7.0	7.0	6.0	5.0	5.5	4.5	4.0	4.0	3.5	3.0	3.5
26	7.5	6.5	7.0	5.0	4.0	4.5	5.0	4.5	5.0	3.5	3.0	3.0
27	7.5	6.5	7.0	3.5	3.0	3.5	5.0	4.0	4.5	3.0	3.0	3.0
28	7.5	7.0	7.0	3.5	3.0	3.0	4.0	4.0	4.0	3.0	3.0	3.0
29	7.0	6.5	6.5	3.5	3.0	3.5	4.5	4.0	4.5	3.0	2.5	2.5
30	6.5	6.0	6.5	3.5	3.5	3.5	4.0	4.0	4.0	3.0	2.5	2.5
31	7.0	6.5	7.0	---	---	---	4.0	3.5	3.5	3.5	3.0	3.5
MONTH	10.5	6.0	7.5	7.5	3.0	6.0	6.0	3.5	4.5	5.0	1.5	3.0

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	3.5	3.5	4.5	4.0	4.0	4.5	4.0	4.5	6.0	5.0	5.5
2	4.0	3.5	3.5	4.0	3.5	4.0	4.5	4.0	4.5	5.5	5.0	5.5
3	3.5	3.5	3.5	4.0	3.5	4.0	5.0	4.0	4.5	5.5	4.0	5.0
4	4.0	3.5	4.0	4.5	4.0	4.0	5.0	4.0	4.5	5.5	4.0	4.5
5	4.5	4.0	4.0	4.5	4.0	4.5	5.0	4.0	4.5	6.0	4.0	5.0
6	5.0	4.5	4.5	4.5	3.0	4.0	5.0	4.0	4.5	6.0	4.5	5.5
7	4.5	4.5	4.5	3.0	2.0	2.5	5.5	4.0	4.5	7.0	5.0	6.0
8	5.0	4.5	4.5	3.5	2.0	3.0	4.5	4.5	4.5	6.5	5.5	6.0
9	5.0	5.0	5.0	3.5	2.5	3.0	5.0	4.0	4.5	7.5	5.0	6.0
10	5.0	5.0	5.0	4.0	3.5	3.5	4.5	4.0	4.5	6.0	5.5	6.0
11	5.0	4.5	5.0	4.0	3.5	4.0	5.0	4.0	4.5	5.5	4.5	5.0
12	5.5	5.0	5.5	3.5	3.5	3.5	5.5	4.0	5.0	6.0	4.5	5.0
13	5.0	4.5	4.5	3.5	3.5	3.5	5.5	4.5	5.0	6.0	5.0	5.5
14	5.0	4.5	4.5	3.5	3.5	3.5	---	---	---	6.0	5.0	5.5
15	5.0	4.5	5.0	4.0	3.5	4.0	---	---	---	6.0	5.0	5.5
16	5.5	5.0	5.0	4.0	3.5	4.0	---	---	---	5.5	4.5	5.5
17	5.5	5.0	5.5	4.0	3.5	3.5	---	---	---	6.5	5.0	5.5
18	5.5	5.0	5.0	4.5	3.5	4.0	---	---	---	6.0	5.5	6.0
19	5.0	5.0	5.0	4.5	4.0	4.0	---	---	---	7.5	5.5	6.5
20	5.5	5.0	5.5	4.0	4.0	4.0	---	---	---	7.5	6.0	6.5
21	5.0	4.5	5.0	4.5	4.0	4.5	5.0	4.5	4.5	8.0	6.0	7.0
22	4.5	4.0	4.5	4.5	4.0	4.5	6.0	4.5	5.0	8.0	6.0	7.0
23	4.5	4.0	4.0	4.5	4.0	4.0	6.0	4.5	5.0	6.5	6.0	6.5
24	4.0	3.5	4.0	4.5	3.5	4.0	6.0	4.5	5.0	7.0	5.5	6.5
25	4.0	2.5	3.0	4.5	4.0	4.0	6.0	4.5	5.0	6.5	5.0	6.0
26	3.5	2.5	3.5	4.5	4.0	4.0	5.0	4.5	4.5	6.0	5.0	5.5
27	4.0	3.5	4.0	4.0	3.5	4.0	6.0	4.0	5.0	5.0	4.0	4.5
28	4.0	4.0	4.0	4.0	3.5	4.0	6.5	4.5	5.5	6.5	4.0	5.0
29	---	---	---	4.5	3.5	4.0	6.5	5.0	5.5	6.0	4.5	5.5
30	---	---	---	4.5	3.5	4.0	7.0	4.5	6.0	6.0	5.5	5.5
31	---	---	---	4.5	4.0	4.5	---	---	---	6.0	5.5	5.5
MONTH	5.5	2.5	4.5	4.5	2.0	4.0	7.0	4.0	5.0	8.0	4.0	5.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	6.5	5.0	5.5	12.0	9.5	10.5	14.0	11.0	12.0	11.5	9.5	10.5
2	6.5	5.0	6.0	10.0	9.0	9.5	14.0	11.5	12.5	10.5	10.0	10.0
3	6.0	5.5	6.0	9.5	9.0	9.0	14.5	11.5	13.0	10.5	10.0	10.0
4	6.5	6.0	6.0	9.5	8.0	9.0	14.5	12.0	13.0	11.5	10.0	10.5
5	9.0	5.5	7.0	9.5	8.0	9.0	14.5	11.5	12.5	11.0	10.0	10.5
6	10.0	6.5	8.0	10.5	8.0	9.0	14.0	11.5	12.5	11.0	9.5	10.5
7	10.0	7.0	8.5	11.0	8.5	9.5	14.5	11.5	12.5	11.5	10.0	10.5
8	8.5	7.0	8.0	11.0	9.0	10.0	14.5	11.5	12.5	11.0	9.0	10.0
9	9.0	6.5	7.5	10.0	9.5	9.5	14.5	11.5	12.5	11.0	9.0	10.0
10	9.0	7.0	8.0	11.0	9.0	10.0	14.5	11.5	12.5	11.0	9.5	10.0
11	9.5	7.5	8.5	11.0	9.5	10.5	14.5	11.5	12.5	11.0	9.5	10.0
12	10.0	7.5	8.5	11.0	9.5	10.0	15.0	11.5	13.0	11.5	9.5	10.5
13	10.0	7.5	9.0	10.0	9.0	9.5	15.0	12.0	13.0	11.5	10.0	10.5
14	10.0	8.0	9.0	11.5	8.5	10.0	14.5	12.0	13.0	11.5	10.0	10.5
15	10.0	8.0	9.0	12.0	9.5	10.5	15.0	11.5	13.0	10.5	9.5	10.0
16	10.5	8.0	9.0	11.0	10.0	10.5	15.0	12.0	13.0	10.0	9.5	10.0
17	11.0	8.5	9.5	11.0	9.5	10.0	15.0	12.0	13.0	9.5	9.5	9.5
18	11.0	9.0	10.0	11.5	9.0	10.0	14.0	12.0	13.0	9.5	9.5	9.5
19	10.0	9.0	9.5	11.5	9.0	10.0	14.0	12.0	12.5	9.5	9.0	9.5
20	9.5	9.0	9.0	12.0	9.0	10.5	14.5	12.0	13.0	9.0	9.0	9.0
21	10.0	8.5	9.0	11.5	10.0	10.5	12.5	12.0	12.5	8.5	8.0	8.5
22	10.5	8.5	9.5	12.5	9.5	11.0	13.0	11.5	12.0	9.0	8.0	8.5
23	10.5	9.0	9.5	12.5	10.0	11.0	12.0	11.5	11.5	9.0	8.5	8.5
24	11.5	9.0	10.0	13.0	10.5	11.5	11.5	11.0	11.0	9.0	8.5	8.5
25	11.0	9.0	10.0	13.5	10.5	12.0	10.5	10.5	10.5	8.5	8.0	8.5
26	11.0	9.0	10.0	13.5	11.0	12.0	11.5	10.0	10.5	8.5	7.5	8.0
27	11.0	9.0	10.0	13.0	11.0	12.0	10.5	10.0	10.5	8.5	7.5	8.0
28	11.5	9.0	10.5	12.0	11.0	11.5	11.0	10.5	10.5	9.0	8.0	8.5
29	11.0	9.5	10.0	12.5	10.0	11.0	10.5	10.5	10.5	9.0	8.0	8.5
30	11.5	9.0	10.0	13.0	10.0	11.5	10.5	9.0	10.0	8.5	7.5	8.0
31	---	---	---	13.5	10.5	12.0	11.5	9.5	10.5	---	---	---
MONTH	11.5	5.0	8.5	13.5	8.0	10.5	15.0	9.0	12.0	11.5	7.5	9.5
YEAR	15.0	1.5	7.0									

SKOKOMISH RIVER BASIN

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'25", long 123°13'20", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream face of Cushman Dam No. 1, 4 mi (6.4 km) northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi² (242.7 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
APR										
15...	1015	1.0	63	7.4	9.2	1	11.5	3	.02	.02
JUN										
16...	0955	1.0	62	7.2	15.2	0	10.1	>20000	.00	.00
16...	1000	20	60	7.3	15.1	1	10.3	>20000	.00	.00
16...	1005	50	61	7.4	11.6	1	11.4	460	.00	.00
16...	1010	100	61	7.3	7.1	0	10.1	67	.03	.00
SEP										
15...	1030	1.0	70	7.5	18.0	0	9.3	30	.00	.01
15...	1035	20	68	7.5	18.0	0	9.3	819	.00	.00
15...	1040	50	69	7.5	15.7	0	11.4	86	.01	.00
15...	1045	100	70	6.8	7.9	0	9.2	81	.01	.00

SKOKOMISH RIVER BASIN

12057500 NORTH FORK SKOKOMISH RIVER NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'24", long 123°13'16", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on Lake Cushman at city of Tacoma dam, 4 mi (6.4 km) northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi² (242.7 km²).

PERIOD OF RECORD.--August 1910 to September 1911 (fragmentary) and February 1913 to current year (monthly discharge only). Records of estimated monthly discharge only October 1911 to January 1913 in files of Tacoma district office.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Discharge determined from record of power output and Lake Cushman elevations, plus spillway discharge when present. Prior to Sept. 25, 1911, nonrecording gage and February 1913 to September 1923, water-stage recorder, at approximately same site, at datum 486.4 ft (148.25 m) above mean sea level prior to Sept. 2, 1918, and at datum 5.00 ft (1.524 m) higher Sept. 2, 1918, to September 1923, levels by city of Tacoma. October 1923 to September 1930 water-stage recorder 1 mi (1.6 km) downstream at different datum.

REMARKS.--Records fair. No diversion of consequence. Flow regulated in Lake Cushman since October 1925 for power by city of Tacoma.

COOPERATION.--Records of power output, spill, and elevations of Lake Cushman furnished by city of Tacoma.

AVERAGE DISCHARGE.--66 years (water years 1912-77), 759 ft³/s (21.49 m³/s), 110.00 in/yr (2,794 mm/yr) 549,900 acre-ft/yr (678 hm³/yr) adjusted for storage.

EXTREMES.--Not determined since regulation began in Lake Cushman.

MONTHLY DISCHARGE, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Month	Observed				Change in contents in Lake Cushman (acre-feet)	Adjusted for change in reservoir contents			
	Maximum (cfs)	Minimum (cfs)	Mean (cfs)	Runoff in acre-feet		Mean (cfs)	Per square mile	Runoff in inches	Runoff in acre-feet
October.................	1,170	452	968	59,520	-48,660	177	1.89	2.17	10,860
November................	1,790	0	835	49,670	-31,740	301	3.21	3.59	17,930
December................	1,650	124	674	41,430	-14,580	437	4.66	5.37	26,850
CAL YR 1976..........	2,270	0	720	522,900	-103,800	577	6.16	83.86	419,100
January.................	1,860	292	1,282	78,830	-51,320	447	4.77	5.50	27,510
February................	1,480	305	662	36,770	0	662	7.07	7.36	36,770
March...................	1,700	408	1,019	62,670	-21,700	666	7.11	8.20	40,970
April...................	872	0	265	15,770	+24,180	672	7.17	7.99	39,950
May.....................	298	0	13.6	839	+35,920	598	6.38	7.36	36,760
June....................	0	0	0	0	+33,800	568	6.06	6.76	33,800
July....................	0	0	0	0	+9,960	162	1.73	1.99	9,960
August..................	0	0	0	0	+10,800	176	1.88	2.16	10,800
September...............	361	0	12.0	716	+22,970	398	4.25	4.74	23,690
WTR YR 1977..........	1,860	0	478	346,200	-30,370	436	4.65	63.19	315,800

12058600 LOWER LAKE CUSHMAN NEAR HOODSPORT, WA

LOCATION.--Lat 47°23'52", long 123°11'57", in SE¼NW¼ sec.16, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110018. Samples taken at log boom, approximately 300 ft (91 m).

DRAINAGE AREA.--99.2 mi² (256.9 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
16...	1235	1.0	60	7.1	8.9	0	9.8	B13	.01	.00
16...	1245	20	59	7.2	8.6	0	9.7	B6	.01	.00
16...	1255	50	59	7.2	8.4	0	9.6	B1	.01	.01
16...	1305	100	59	7.2	7.7	0	7.9	B4	.03	.00
APR										
15...	1055	1.0	60	7.5	6.2	0	11.7	1	.02	.01
15...	1100	20	61	7.5	7.4	0	11.6	4	.02	.01
15...	1105	50	59	7.5	6.8	0	11.3	1	.02	.00
15...	1110	100	58	7.4	6.3	0	11.0	1	.03	.00
JUN										
16...	1105	1.0	67	7.0	16.9	1	9.9	B130	.00	.02
16...	1110	20	65	7.1	11.5	0	11.4	230	.00	.01
16...	1115	50	67	7.2	8.3	0	11.6	28	.00	.00
16...	1120	100	66	7.1	6.6	0	9.6	B73	.01	.00
SEP										
15...	1155	1.0	56	7.0	17.1	0	9.6	31	.01	.00
15...	1200	20	56	6.8	19.7	0	9.4	10	.01	.00
15...	1210	50	67	6.7	9.7	0	10.3	6	.00	.01
15...	1215	100	67	6.6	6.4	0	7.4	B30	.01	.01

B Results based upon colony counts outside the ideal range.

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°19'42", long 123°14'33", in NE¼NW¼ sec.7, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on left bank 1.1 mi (1.8 km) upstream from South Fork Skokomish River, 5.4 mi (8.7 km) southwest of Potlatch, 7.2 mi (11.6 km) downstream from city of Tacoma's Cushman Dam No. 2, and at mile 10.1 (16.3 km).

DRAINAGE AREA.--117 mi² (303 km²), includes 99 mi² (256 km²) above Cushman Dam No. 2 which is normally non-contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1944 to November 1949, March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 63.49 ft (19.352 m) above mean sea level (levels by city of Tacoma). Prior to Nov. 27, 1949 (destroyed by flood of Nov. 27, 1949), and Mar. 18 to May 9, 1950, water-stage recorder at site 200 ft (61 m) downstream at present datum.

REMARKS.--Water-discharge records good. Entire flow of river normally diverted at Cushman Dam No. 2 to supply power-plant which discharges directly into sea (Hood Canal). Main portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No. 2 and may bypass this station. Flow regulated by Lake Cushman (see sta 12057500) and by pondage in Cushman Reservoir No. 2, from which spill and releases are infrequent.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft³/s (219 m³/s) Nov. 4, 1955, gage height, 10.45 ft (3.185 m); minimum recorded, 1.3 ft³/s (0.037 m³/s) Sept. 5, 14, 16, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 858 ft³/s (24.3 m³/s) Mar. 7, gage height, 4.23 ft (1.289 m); minimum, 4.8 ft³/s (0.14 m³/s) Aug. 6, gage height, 2.01 ft (0.613 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	20	11	39	48	133	50	27	43	14	7.1	9.3
2	7.1	13	10	39	45	123	50	27	32	13	6.7	11
3	7.1	11	9.3	35	39	120	48	32	32	13	6.7	18
4	7.1	8.7	9.3	32	38	103	45	27	36	13	6.7	30
5	7.1	7.6	9.3	29	36	89	43	26	30	13	6.7	22
6	7.1	7.6	9.3	27	38	100	45	25	27	13	6.7	18
7	7.1	7.6	10	26	36	599	45	26	29	13	6.7	15
8	7.1	8.7	25	25	33	638	41	23	29	12	6.7	15
9	7.6	8.0	24	24	33	594	45	22	25	11	6.7	14
10	7.6	7.6	20	24	79	350	39	21	23	11	6.7	13
11	7.6	7.6	18	30	79	242	38	21	22	11	6.7	13
12	7.6	7.1	16	50	86	190	36	20	20	11	6.7	12
13	7.6	7.1	16	45	81	149	35	20	20	11	6.7	12
14	7.6	8.7	15	41	72	130	33	20	21	11	6.2	12
15	7.1	14	22	50	65	114	38	20	19	11	6.2	12
16	7.1	16	23	52	58	100	36	22	18	10	6.2	13
17	7.1	30	23	67	58	92	33	19	17	10	6.2	13
18	7.1	27	22	127	58	84	32	18	16	9.3	6.7	15
19	7.6	19	19	114	54	76	30	18	16	9.3	7.1	25
20	7.6	15	19	86	63	72	29	17	16	8.7	7.6	25
21	7.6	15	17	72	74	69	33	18	15	9.3	8.0	18
22	7.6	13	17	60	105	65	39	18	15	8.7	8.7	14
23	7.6	12	19	52	92	69	32	19	15	8.7	12	15
24	15	14	17	48	79	69	33	19	16	8.0	16	16
25	14	16	22	43	76	63	33	16	15	7.6	35	23
26	8.6	13	201	41	74	65	38	19	15	7.6	23	21
27	7.1	12	139	41	100	65	32	21	15	7.6	14	18
28	8.0	11	89	38	142	58	30	36	15	7.6	15	20
29	8.0	11	67	36	---	56	29	26	14	7.6	13	22
30	7.6	11	54	35	---	54	27	25	13	7.6	14	19
31	33	---	47	47	---	52	---	41	---	7.1	11	---
TOTAL	268.8	379.3	1019.2	1475	1841	4783	1117	709	639	315.7	303.4	503.3
MEAN	8.67	12.6	32.9	47.6	65.8	154	37.2	22.9	21.3	10.2	9.79	16.8
MAX	33	30	201	127	142	638	50	41	43	14	35	30
MIN	5.8	7.1	9.3	24	33	52	27	16	13	7.1	6.2	9.3
AC-FT	533	752	2020	2930	3650	9490	2220	1410	1270	626	602	998

CAL YR 1976 TOTAL 21639.0 MEAN 59.1 MAX 672 MIN 5.8 AC-FT 42920
WTR YR 1977 TOTAL 13353.7 MEAN 36.6 MAX 638 MIN 5.8 AC-FT 26490

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH.--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to current year.

INSTRUMENTATION.--Temperature recorder since March 1965.

REMARKS.--Interruptions in record due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C July 8, 1968; minimum, 1.0°C Dec. 27, 1965, Dec. 31, 1968, Jan. 23, 31, Feb. 7, 1969, Jan. 14, 15, 1971.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 17.0°C Aug. 3, 7, 9-13, 15, 16; minimum recorded, 3.0°C Jan. 9.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	11.0	11.5	9.0	8.0	8.5	6.0	5.5	5.5	5.5	5.0	5.5
2	13.0	11.0	11.5	8.5	8.0	8.0	6.5	6.0	6.0	5.0	5.0	5.0
3	11.5	9.5	10.5	9.0	8.0	8.5	6.5	6.5	6.5	5.5	5.0	5.5
4	11.5	9.5	10.5	8.5	7.0	8.0	7.0	6.5	7.0	5.5	5.5	5.5
5	11.0	10.0	10.5	9.0	8.0	8.5	7.0	6.5	7.0	5.5	4.5	4.5
6	12.5	9.5	10.5	9.0	8.5	8.5	7.5	6.5	7.0	4.5	4.0	4.0
7	12.0	9.5	10.5	9.5	8.0	8.5	8.5	7.5	8.0	4.5	3.5	4.0
8	12.0	10.0	11.0	9.5	9.0	9.5	8.0	6.5	7.5	4.0	3.5	3.5
9	12.0	10.5	11.5	10.0	9.0	9.5	7.0	6.0	6.5	4.0	3.0	3.5
10	12.5	10.5	11.5	10.0	9.5	9.5	7.5	6.5	7.0	4.0	3.5	4.0
11	11.5	10.0	11.0	10.0	8.5	9.5	8.0	7.5	7.5	4.5	4.0	4.5
12	11.5	9.5	10.5	9.0	8.0	8.0	7.5	6.5	7.0	5.0	4.5	5.0
13	11.0	9.0	10.0	8.0	7.0	7.5	8.0	7.5	7.5	6.0	5.0	5.5
14	11.5	10.0	10.5	8.5	8.0	8.0	8.0	8.0	8.0	6.0	5.5	5.5
15	10.0	8.5	9.0	8.5	8.0	8.5	8.0	8.0	8.0	6.0	5.5	6.0
16	10.0	8.0	9.0	9.5	8.5	9.0	8.5	8.0	8.5	6.5	6.0	6.0
17	9.5	8.0	8.5	9.5	9.0	9.5	9.0	7.5	8.5	7.0	6.5	6.5
18	9.5	7.5	8.5	8.5	8.0	8.5	7.5	6.5	7.0	7.0	7.0	7.0
19	9.5	7.0	8.0	8.5	8.0	8.5	6.5	6.0	6.0	7.0	6.5	6.5
20	9.0	7.0	8.0	8.5	7.5	8.0	6.5	5.5	6.0	6.5	6.0	6.0
21	9.0	7.0	8.0	8.5	8.0	8.0	7.5	6.5	7.0	7.0	6.0	6.5
22	8.5	7.5	8.5	8.5	8.0	8.0	7.0	6.5	7.0	6.0	5.5	5.5
23	9.0	8.5	9.0	8.0	7.0	7.5	7.0	6.0	6.5	6.5	5.5	6.0
24	9.0	8.5	9.0	8.5	8.0	8.0	6.5	6.0	6.0	6.0	5.0	5.5
25	10.0	8.5	9.0	8.0	7.0	7.5	6.5	6.5	6.5	5.5	4.5	5.0
26	10.0	8.5	9.0	6.5	6.0	6.0	7.5	6.5	7.0	5.0	4.0	4.5
27	9.5	8.0	8.5	6.0	5.0	5.5	7.0	6.5	6.5	4.5	3.5	4.0
28	9.5	9.0	9.0	5.5	4.5	5.0	6.0	5.5	6.0	---	---	---
29	9.5	8.5	9.0	5.5	4.5	5.0	6.5	6.0	6.5	---	---	---
30	8.5	7.5	8.0	6.0	4.5	5.0	6.0	5.5	5.5	---	---	---
31	9.0	8.5	9.0	---	---	---	5.5	5.0	5.0	---	---	---
MONTH	13.0	7.0	9.5	10.0	4.5	8.0	9.0	5.0	7.0	7.0	3.0	5.0

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	7.0	5.5	6.5	8.0	6.5	7.0	11.0	9.5	10.5
2	---	---	---	6.0	5.5	5.5	8.5	6.0	7.0	10.5	9.5	10.0
3	---	---	---	7.0	5.5	6.0	10.0	6.0	7.5	11.5	9.0	10.0
4	---	---	---	7.0	6.0	6.5	11.0	6.5	8.0	10.5	8.0	9.0
5	---	---	---	7.5	5.5	6.5	11.5	6.5	8.5	11.0	7.0	9.0
6	---	---	---	7.0	6.0	6.5	12.0	7.0	9.0	12.5	8.0	10.0
7	---	---	---	6.0	6.0	6.0	12.0	7.5	9.0	13.5	8.5	10.5
8	---	---	---	6.0	6.0	6.0	10.0	8.0	9.0	11.0	9.0	10.0
9	---	---	---	7.0	6.0	6.0	10.0	7.5	8.5	13.5	8.0	10.5
10	---	---	---	7.0	5.5	6.0	8.5	7.0	7.5	10.5	9.0	9.5
11	---	---	---	7.0	5.5	6.0	10.0	7.0	8.0	10.5	8.0	9.0
12	8.0	7.0	7.5	6.5	5.5	6.0	10.5	6.5	8.0	11.5	7.0	9.0
13	7.5	6.5	7.0	6.5	5.5	5.5	11.0	7.0	8.5	10.5	8.5	9.5
14	7.0	5.5	6.5	6.0	5.0	5.5	9.5	6.0	8.0	12.0	8.0	9.5
15	7.0	5.5	6.5	7.0	5.5	6.0	9.5	7.0	8.0	11.0	8.0	9.0
16	8.0	6.0	7.0	7.5	5.0	6.0	9.5	6.0	7.5	9.5	7.5	8.5
17	7.5	7.0	7.0	7.5	5.0	6.0	9.5	5.5	7.5	11.0	8.0	9.5
18	8.5	6.5	7.5	8.0	6.0	6.5	10.5	6.0	8.0	11.0	8.5	9.5
19	8.0	6.0	7.0	7.5	5.5	6.5	9.5	6.5	7.5	12.5	8.5	10.5
20	7.5	7.0	7.0	7.5	5.5	6.5	10.5	6.0	8.0	11.5	9.0	10.5
21	7.0	7.0	7.0	8.0	7.0	7.5	8.5	7.0	8.0	13.5	9.5	11.0
22	7.5	6.0	7.0	8.0	6.5	7.5	12.5	7.5	9.5	13.0	9.0	11.0
23	7.0	5.5	6.0	7.5	6.5	7.0	12.0	8.0	10.0	11.0	9.5	10.0
24	7.0	5.0	5.5	8.5	6.0	7.0	13.0	8.5	10.5	12.0	8.5	10.0
25	5.5	4.0	4.5	8.0	6.0	7.0	12.5	9.0	10.5	11.0	7.5	9.5
26	6.0	4.5	5.5	7.5	6.5	7.0	10.5	8.5	9.5	10.5	8.5	9.5
27	6.5	5.5	6.0	9.0	6.0	7.0	13.0	7.5	10.0	9.0	8.0	8.5
28	7.0	6.0	6.5	9.0	5.5	6.5	12.5	7.5	10.0	11.0	7.5	9.0
29	---	---	---	9.0	6.0	7.0	13.0	9.0	10.5	11.5	8.0	9.5
30	---	---	---	9.0	5.0	7.0	13.5	8.5	11.0	9.5	8.5	9.0
31	---	---	---	9.0	5.5	7.0	---	---	---	9.5	9.0	9.5
MONTH	8.5	4.0	6.5	9.0	5.0	6.5	13.5	5.5	8.5	13.5	7.0	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	8.5	10.0	15.0	11.0	13.0	16.5	12.0	14.0	13.5	10.5	12.0
2	11.5	8.0	9.5	15.5	10.5	12.5	16.5	12.0	14.5	12.5	11.5	11.5
3	10.0	9.0	9.5	13.0	11.0	12.0	17.0	12.5	14.5	12.5	11.5	12.0
4	12.0	9.0	10.0	14.5	10.0	12.0	16.5	12.5	14.5	13.5	11.5	12.5
5	14.5	9.0	11.5	12.5	10.0	11.5	16.5	12.5	14.0	13.5	11.5	12.5
6	15.0	10.0	12.5	14.5	10.0	12.0	16.5	12.5	14.0	13.5	10.5	12.0
7	15.5	11.0	12.5	15.0	10.0	12.5	17.0	12.5	14.5	13.5	11.0	12.0
8	13.5	10.5	11.5	15.5	10.5	13.0	16.5	12.5	14.5	13.5	10.5	12.0
9	14.5	9.5	11.5	13.0	11.5	12.0	17.0	12.5	14.5	13.0	10.5	11.5
10	14.5	9.5	11.5	14.5	10.5	12.0	17.0	12.5	14.5	13.0	10.0	11.5
11	15.0	10.0	12.0	15.5	11.5	13.0	17.0	12.5	14.5	13.0	10.5	11.5
12	15.0	9.5	12.0	13.5	11.0	12.0	17.0	13.0	15.0	13.5	10.5	12.0
13	15.0	10.0	12.5	14.0	10.5	12.0	17.0	13.0	14.5	13.5	10.5	12.0
14	14.0	10.[illegible]	12.0	15.0	10.5	12.5	16.5	12.0	14.0	13.5	11.0	12.0
15	12.5	10.5	11.5	14.5	11.5	13.0	17.0	12.5	14.5	12.0	10.5	11.5
16	14.0	10.0	11.5	13.5	11.5	12.5	17.0	12.5	14.5	12.5	11.0	11.5
17	15.5	10.0	12.5	14.0	11.0	12.5	16.5	12.5	14.5	11.5	10.5	11.0
18	14.5	11.0	12.5	14.5	10.5	12.0	15.5	12.5	14.0	11.5	11.0	11.0
19	14.5	10.5	12.0	15.0	10.5	12.5	15.0	12.5	13.5	12.5	11.0	11.5
20	13.5	10.5	12.0	14.5	10.5	12.5	15.5	12.5	13.5	12.5	11.0	11.5
21	14.0	11.0	12.5	15.0	11.5	13.0	13.5	12.5	13.0	11.5	10.0	11.0
22	13.5	10.5	12.0	15.5	10.5	13.0	13.5	12.0	13.0	11.5	10.0	11.0
23	14.5	10.5	12.5	16.0	11.0	13.0	13.0	12.0	12.5	11.5	10.5	11.0
24	14.0	10.5	12.5	16.0	11.0	13.5	13.0	12.0	12.5	11.5	10.5	11.0
25	14.5	11.0	12.5	15.5	12.0	13.5	12.5	12.0	12.5	11.5	10.5	11.0
26	15.5	10.5	12.5	16.0	12.0	13.5	13.5	11.5	12.5	11.5	9.5	10.5
27	14.0	10.5	12.0	15.5	11.5	13.5	12.0	11.0	11.5	11.0	9.5	10.0
28	15.5	10.5	12.5	14.0	12.0	13.0	13.5	11.5	12.5	11.5	10.5	10.5
29	13.5	11.0	12.5	14.0	11.0	12.5	12.5	11.5	12.0	12.0	10.0	11.0
30	15.5	10.0	12.5	16.0	11.0	13.5	13.0	11.0	12.0	11.0	9.5	10.5
31	---	---	---	16.5	12.0	14.0	14.0	11.0	12.0	---	---	---
MONTH	15.5	8.0	12.0	16.5	10.0	12.5	17.0	11.0	13.5	13.5	9.5	11.5
YEAR	17.0	3.0	9.5									

12060500 SOUTH FORK SKOKOMISH RIVER NEAR UNION, WA

LOCATION.--Lat 47°20'26", long 123°16'44", in SW¼NE¼ sec.2, T.21 N., R.5 W., Mason County, Hydrologic Unit 17110017, on right bank 3.0 mi (4.8 km) upstream from Vance Creek, 3.2 mi (5.1 km) upstream from confluence with North Fork and 8.5 mi (13.7 km) west of Union.

DRAINAGE AREA.--76.3 mi² (198 km²).

PERIOD OF RECORD.--August 1931 to current year.

REVISED RECORDS.--WSP 1216: 1950. WSP 1316: 1934(M), 1938(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 103.35 ft (31.501 m) above mean sea level.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--46 years, 735 ft³/s (20.82 m³/s) 130.82 in/yr (3,323 mm/yr), 532,500 acre-ft/yr (657 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s (612 m³/s) Jan. 22, 1935, Nov. 26, 1949, gage height, 11.0 ft (3.35 m) from rating curve extended above 11,000 ft³/s (312 m³/s); minimum, 62 ft³/s (1.76 m³/s) Sept. 18, 1938; minimum gage height, 1.06 ft (0.323 m) Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 26	1100	*4,820	137	*4.70	1.433

Minimum discharge, 79 ft³/s (2.24 m³/s) Oct. 21, 22, 23, 24, gage height, 1.32 ft (0.402 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	526	189	475	489	1130	489	510	1070	181	105	193
2	97	332	178	440	416	880	461	542	760	178	102	205
3	102	261	171	390	380	760	454	870	626	176	102	376
4	95	221	164	368	356	671	489	690	780	171	102	475
5	93	193	157	338	344	599	576	566	740	171	100	447
6	91	176	150	320	320	810	760	503	653	167	102	330
7	91	160	157	305	305	2810	880	454	599	160	100	280
8	89	153	475	285	290	2680	860	440	526	153	97	238
9	89	144	536	280	285	2010	730	422	461	150	97	213
10	93	138	392	275	1100	1390	680	416	422	150	95	193
11	93	132	362	290	1130	1060	536	392	388	147	93	178
12	91	126	326	510	1220	952	489	362	376	144	93	167
13	89	120	315	442	1070	880	482	376	356	141	91	157
14	87	144	295	422	770	710	454	380	330	138	91	150
15	85	305	461	503	617	626	454	356	320	135	91	144
16	85	380	500	574	558	574	436	344	305	132	89	141
17	83	850	608	1010	558	526	410	320	290	132	89	141
18	83	690	582	2260	690	503	386	315	280	132	87	157
19	81	475	475	1320	574	489	368	305	270	129	87	626
20	81	380	404	870	644	461	350	305	261	123	87	860
21	81	326	356	680	1050	496	362	356	252	123	87	558
22	79	285	326	574	1660	574	558	332	243	120	87	422
23	79	256	310	496	1110	710	558	310	234	117	87	392
24	117	252	295	447	820	720	608	295	229	115	130	392
25	270	326	332	410	690	626	653	290	221	115	516	536
26	243	275	3510	386	589	626	790	440	213	112	482	482
27	171	243	1950	356	770	880	671	496	209	112	265	404
28	150	225	1050	332	1330	730	566	780	197	110	243	380
29	150	213	780	315	---	626	542	671	193	110	247	368
30	135	201	635	300	---	950	510	576	180	110	265	320
31	574	---	534	410	---	510	---	820	---	107	225	---
TOTAL	3840	8508	17062	16431	20165	27409	16326	14230	12009	4250	4552	9920
MEAN	124	284	550	530	719	884	544	459	400	137	147	331
MAX	574	850	3510	2260	1660	2810	880	870	1070	181	516	860
MIN	79	120	150	275	285	461	350	290	180	107	87	141
CFSM	1.63	3.72	7.21	6.95	9.42	11.6	7.13	6.02	5.24	1.80	1.93	4.34
IN.	1.87	4.15	8.32	8.01	9.82	13.36	7.96	6.94	5.85	2.08	2.22	4.84
AC-FT	7620	16870	33840	32590	39960	54370	32380	28230	23820	8430	9030	19680

CAL YR 1976 TOTAL 192266 MEAN 526 MAX 4570 MIN 79 CFSM 6.89 IN 93.70 AC-FT 381500
WTR YR 1977 TOTAL 154696 MEAN 424 MAX 3510 MIN 79 CFSM 5.56 IN 75.62 AC-FT 306800

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°18'36", long 123°10'33", in SE¼NW¼ sec.15, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream side of right pier of bridge on U.S. Highway 101, 3.7 mi (6.0 km) downstream from confluence of North and South Forks, 4.7 mi (7.6 km) southwest of Potlatch, and at mile 5.3 (8.5 km).

DRAINAGE AREA.--227 mi² (588 km²), includes 99 mi² (256 km²) above Cushman Dam No. 2 which is normally noncontributing

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1943 to current year.

REVISED RECORDS.--WSP 1716: 1950(M), 1956. WSP 1932: Drainage area. WRD Wash. 1972: 1968(M), 1971(M). WRD Wash. 1975: 1974.

GAGE.--Water-stage recorder. Datum of gage is 10.67 ft (3.252 m) above mean sea level. Prior to May 27, 1964, water-stage recorders or nonrecording gage at several sites about 0.6 mi (1.0 km) upstream at different datums. Supplementary water-stage recorder on right bank at site 0.6 mile (1.0 km) upstream at datum 16.47 ft (5.020 m) above mean sea level, used Nov. 16 to Dec. 10, 1964, June 11 to July 7, and Nov. 2-24, 1965.

REMARKS.--Water-discharge records good. Flow partly regulated by Lake Cushman and Cushman Reservoir No. 2. In normal years practically entire flow of North Fork is diverted at Cushman Dam No. 2 and is discharged into Puget Sound through Cushman powerplant No. 2.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s (765 m³/s) Nov. 3, 1955, gage height, 12.6 ft (3.84 m) site and datum then in use; minimum, 125 ft³/s (3.54 m³/s), Sept. 14-17, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1933 reached an elevation of 30.8 ft (9.39 m) above mean sea level, at site on left bank 150 ft (46 m) above old highway bridge, discharge, 18,600 ft³/s (527 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,400 ft³/s (181 m³/s) Mar. 7, gage height, 13.48 ft (4.109 m); minimum, 164 ft³/s (4.64 m³/s) part or all of each day Aug. 16-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199	846	332	750	758	1720	758	662	1600	275	188	316
2	193	567	314	702	662	1610	726	686	1100	275	183	309
3	198	652	303	638	606	1260	696	1050	919	264	183	494
4	193	386	282	590	567	1100	702	886	1040	264	183	646
5	193	344	281	552	545	994	766	766	1040	259	178	696
6	188	314	275	522	515	1140	886	686	878	259	178	565
7	188	292	275	494	494	4280	1010	630	814	259	178	652
8	183	281	598	466	473	4550	1020	606	742	248	178	393
9	183	270	846	445	458	3700	1000	575	662	243	174	350
10	183	259	646	425	1280	2540	638	560	606	243	174	320
11	188	248	606	466	1970	1910	758	537	567	238	174	298
12	183	238	560	758	1560	1690	686	501	530	233	174	281
13	183	233	545	774	1520	1450	678	494	501	233	169	264
14	178	238	515	702	1170	1250	646	508	480	228	169	254
15	178	369	662	780	984	1130	646	480	459	228	169	248
16	178	508	919	870	862	1030	622	473	438	222	169	243
17	174	1080	886	1320	846	886	580	445	419	222	164	238
18	174	1100	910	2080	1020	838	560	432	399	217	164	254
19	174	782	776	2030	886	798	530	412	393	212	164	598
20	169	630	670	1380	894	758	508	406	380	207	164	1090
21	169	952	598	1100	1320	782	501	452	362	207	164	782
22	169	494	552	928	2120	862	702	445	356	207	164	686
23	169	445	527	814	1660	1050	718	419	338	202	178	560
24	193	425	496	736	1280	1120	750	394	326	202	207	567
25	320	515	515	670	1190	1010	780	386	320	198	545	694
26	374	473	3640	622	981	1000	919	522	314	198	712	710
27	298	425	2850	582	1160	1300	878	582	303	193	438	656
28	264	399	1580	545	1790	1140	758	1050	298	193	376	567
29	264	374	1200	522	---	1010	718	910	292	193	376	552
30	243	350	982	494	---	862	678	782	286	193	303	501
31	686	---	838	606	---	798	---	1060	---	188	356	---
TOTAL	6823	13929	25003	25161	29082	45376	22036	18782	16042	6998	7372	14438
MEAN	220	464	807	811	1039	1464	735	606	535	226	238	481
MAX	686	1100	3640	2080	2120	4550	1020	1050	1600	275	712	1090
MIN	169	233	275	425	459	758	501	386	286	188	164	238
AC-FT	13530	27630	49590	49890	57680	90000	43710	37250	31820	13880	14620	28640

CAL YR 1976 TOTAL 307322 MEAN 840 MAX 7540 MIN 169 AC-FT 609600
WTR YR 1977 TOTAL 231934 MEAN 635 MAX 4550 MIN 164 AC-FT 460000

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1955 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1955 to September 1962, October 1963 to current year.

INSTRUMENTATION.--Temperature recorder since May 1955.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 20.5°C July 13, 1961; minimum, (1955-62, 1964-77) 1.0°C Mar. 7, 1956.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 15.0°C June 17, 28, 30, July 31 to Aug. 3; minimum, 4.5°C Jan. 6-10, Feb. 25, 26.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.0	9.5	10.0	9.0	8.0	8.5	6.5	6.0	6.5	6.0	5.5	5.5
2	11.5	9.5	10.0	8.5	7.5	8.0	7.0	6.5	6.5	6.0	5.0	5.5
3	10.5	8.5	9.5	9.0	8.0	8.5	7.0	6.5	7.0	6.5	5.5	6.0
4	10.5	8.5	9.5	9.0	8.0	8.5	7.5	7.0	7.0	6.5	6.0	6.0
5	10.5	9.0	9.5	9.0	8.0	8.5	7.5	7.0	7.0	6.0	5.0	5.5
6	11.0	9.0	9.5	9.0	8.5	8.5	8.0	7.0	7.5	5.5	4.5	5.0
7	11.0	8.5	9.5	9.5	9.0	9.0	8.5	8.0	8.0	5.5	4.5	5.0
8	11.0	9.0	10.0	9.5	9.0	9.0	8.0	6.5	7.5	5.5	4.5	5.0
9	10.5	9.5	10.0	9.5	9.0	9.0	6.5	5.5	6.0	5.5	4.5	5.0
10	11.0	9.5	10.0	9.5	9.0	9.0	7.5	6.5	7.0	5.5	4.5	5.0
11	11.0	9.0	10.0	9.5	8.0	9.0	8.0	7.0	7.5	6.5	5.5	5.5
12	10.0	9.0	9.5	8.5	8.0	8.0	7.5	6.5	7.0	6.0	5.5	5.5
13	10.0	8.0	9.0	8.5	7.5	8.0	8.0	7.5	7.5	6.5	5.5	6.0
14	10.5	9.0	9.5	8.5	8.0	8.5	8.0	7.5	8.0	7.0	6.0	6.5
15	9.5	8.5	9.0	8.5	8.0	8.5	8.0	8.0	8.0	7.0	6.5	6.5
16	9.5	8.5	9.0	9.5	8.5	9.0	8.5	7.5	8.0	7.0	6.5	6.5
17	9.5	8.0	8.5	9.5	8.5	9.0	8.5	7.0	8.0	7.0	6.5	7.0
18	9.5	7.5	8.5	8.5	7.5	8.0	7.0	6.5	7.0	7.0	7.0	7.0
19	9.5	7.5	8.5	8.0	7.5	8.0	6.5	6.0	6.5	7.0	6.5	6.5
20	9.0	7.5	8.5	8.0	7.0	7.5	7.0	5.5	6.5	7.0	6.0	6.5
21	9.0	7.5	8.5	8.5	7.5	8.0	7.5	7.0	7.0	7.0	6.5	7.0
22	9.0	8.0	8.5	8.5	7.5	8.0	7.0	7.0	7.0	6.5	6.0	6.5
23	9.0	8.5	8.5	8.0	7.0	7.5	7.0	6.0	7.0	7.0	6.0	6.5
24	9.0	8.5	9.0	8.5	7.5	8.0	6.5	6.0	6.5	6.5	5.5	6.0
25	10.0	9.0	9.5	8.0	6.5	7.5	7.0	6.5	6.5	6.5	5.0	5.5
26	9.5	8.5	9.0	7.0	6.0	6.5	7.5	6.5	7.0	6.0	5.0	5.5
27	9.5	8.0	9.0	6.5	5.5	6.0	7.0	6.0	6.5	5.5	5.0	5.5
28	9.5	8.5	9.0	6.5	5.0	5.5	6.5	5.5	6.0	5.5	5.0	5.5
29	9.5	8.0	8.5	6.5	5.5	6.0	7.0	6.0	6.5	6.0	5.5	6.0
30	9.0	7.5	8.0	6.5	5.5	6.0	6.5	5.5	6.0	6.5	5.5	6.0
31	9.5	8.5	9.0	---	---	---	6.0	5.5	5.5	6.5	6.0	6.0
MONTH	11.5	7.5	9.0	9.5	5.0	8.0	8.5	5.5	7.0	7.0	4.5	6.0

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.0	6.0	6.5	7.5	5.5	6.5	8.0	6.5	7.0			
2	7.0	6.0	6.5	6.0	5.5	6.0	9.0	6.5	7.5			
3	6.5	5.5	6.0	7.5	5.5	6.5	10.5	6.5	8.0			
4	7.5	6.0	6.5	7.0	6.0	6.5	10.5	7.0	8.5			
5	7.5	6.0	6.5	8.0	6.0	7.0	11.0	7.0	8.5			
6	8.0	7.0	7.5	7.0	6.0	6.5	10.5	7.0	8.5			
7	7.5	6.0	7.0	6.0	5.5	5.5	10.5	7.0	8.5			
8	8.0	6.5	7.0	6.0	5.5	6.0	9.5	7.5	8.0			
9	8.0	7.0	7.5	7.0	5.5	6.0	9.5	6.5	8.0			
10	7.5	6.5	7.5	---	---	---	8.0	6.5	7.5			
11	7.0	6.5	7.0	---	---	---	9.5	6.5	8.0			
12	8.0	7.0	7.5	---	---	---	9.5	6.5	8.0			
13	7.5	6.0	6.5	---	---	---	10.5	7.0	8.5			
14	7.5	5.5	6.5	---	---	---	9.0	6.5	7.5			
15	7.5	6.0	6.5	---	---	---	8.5	7.0	8.0			
16	8.5	6.5	7.5	---	---	---	9.5	6.5	7.5			
17	8.0	7.0	7.5	---	---	---	9.5	6.0	7.5			
18	8.5	7.0	7.5	---	---	---	10.5	6.5	8.0			
19	8.5	6.0	7.0	---	---	---	9.5	7.0	8.0			
20	7.5	7.0	7.5	---	---	---	10.0	6.5	8.0			
21	7.0	6.5	7.0	---	---	---	8.0	7.5	8.0			
22	7.5	6.0	6.5	---	---	---	11.5	7.5	9.0			
23	7.0	5.5	6.0	---	---	---	11.0	7.5	9.5			
24	7.0	5.0	6.0	---	---	---	11.5	8.0	9.5			
25	6.0	4.5	5.0	---	---	---	10.5	8.0	9.5			
26	7.0	4.5	6.0	---	---	---	---	---	---			
27	7.0	6.0	6.5	---	---	---	---	---	---			
28	6.5	6.0	6.5	---	---	---	---	---	---			
29	---	---	---	---	---	---	---	---	---			
30	---	---	---	---	---	---	---	---	---			
31	---	---	---	9.0	6.0	7.5	---	---	---			
MONTH	8.5	4.5	7.0	9.0	5.5	6.5	11.5	6.0	8.0			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	14.5	11.0	12.0	15.0	10.5	12.5	13.5	10.5	11.5
2	---	---	---	14.5	10.0	12.0	15.0	10.5	12.5	11.5	11.0	11.0
3	9.0	8.5	9.0	12.5	10.5	11.5	15.0	10.5	12.5	12.5	11.0	11.5
4	11.0	8.5	9.5	14.0	9.5	11.5	14.5	10.5	12.5	14.0	11.5	12.5
5	13.5	8.0	10.5	13.0	10.0	11.0	14.0	10.5	12.0	13.5	11.0	12.0
6	14.0	9.5	11.5	14.5	9.5	11.5	14.5	10.5	12.0	13.5	10.5	12.0
7	14.0	10.0	12.0	14.5	9.5	12.0	14.5	10.5	12.5	14.0	10.5	12.0
8	12.5	9.5	11.0	14.5	10.0	12.0	14.5	10.5	12.0	13.5	10.5	11.5
9	13.5	9.0	11.0	12.5	10.5	11.5	14.5	10.0	12.0	13.5	10.0	11.5
10	13.5	9.0	11.5	13.5	10.0	11.5	14.5	10.0	12.0	13.5	10.0	11.5
11	14.0	10.0	11.5	14.5	10.5	12.0	14.5	10.0	12.0	13.5	10.0	11.5
12	14.5	10.0	12.0	12.5	10.5	11.5	14.5	10.0	12.0	13.5	10.0	11.5
13	14.5	10.0	12.0	13.5	10.0	11.5	14.0	10.5	12.0	13.5	10.0	11.5
14	13.5	10.5	11.5	14.0	10.0	11.5	14.0	10.0	12.0	13.0	10.5	11.5
15	12.0	10.5	11.0	14.0	10.5	12.0	14.0	10.5	12.0	11.5	10.0	10.5
16	14.0	10.0	11.5	12.5	10.5	11.5	14.0	10.0	12.0	12.0	10.0	11.0
17	15.0	10.5	12.5	13.0	10.0	11.5	14.0	10.0	12.0	11.0	10.0	10.5
18	14.5	11.0	12.0	13.5	9.5	11.5	13.5	10.5	11.5	11.0	10.0	10.5
19	14.0	10.5	12.0	14.0	9.5	11.5	13.0	10.0	11.0	12.0	10.5	11.0
20	13.5	10.5	11.5	14.0	9.5	11.5	13.5	10.0	11.5	12.0	10.0	11.0
21	13.5	10.5	12.0	14.0	10.5	11.5	11.0	10.0	10.5	11.5	9.5	10.5
22	13.5	10.5	11.5	14.5	10.0	12.0	11.5	10.0	10.5	11.5	9.5	10.5
23	14.5	10.0	12.0	14.5	10.0	12.0	10.5	10.0	10.5	11.5	10.0	10.5
24	14.5	10.5	12.0	14.5	10.0	12.0	11.5	10.0	10.5	11.5	10.0	10.5
25	14.0	11.0	12.0	14.5	10.5	12.0	12.5	11.0	12.0	11.0	10.0	10.5
26	14.5	10.5	12.0	14.5	10.5	12.0	13.5	11.5	12.0	11.5	9.0	10.0
27	14.0	10.5	12.0	14.5	10.5	12.0	12.0	11.0	11.5	11.5	9.0	10.0
28	15.0	10.5	12.5	13.0	10.5	11.5	13.5	11.0	12.0	11.5	10.0	10.5
29	13.5	10.5	12.0	13.5	10.0	11.5	11.5	11.0	11.5	12.0	9.5	10.5
30	15.0	10.0	12.0	14.5	10.0	12.0	13.5	10.5	11.5	11.0	9.0	10.0
31	---	---	---	15.0	10.0	12.5	14.0	10.5	12.0	---	---	---
MONTH	15.0	8.0	11.5	15.0	9.5	11.5	15.0	10.0	12.0	14.0	9.0	11.0
YEAR	15.0	4.5	9.0									

BIG BEEF CREEK BASIN

12069550 BIG BEEF CREEK NEAR SEABECK, WA

LOCATION.--Lat 47°38'27", long 122°47'02", in NW¼SE¼ sec.22, T.25 N., R.1 W., Kitsap County, Hydrologic Unit 17110018, on left bank 1.1 mi (1.8 km) upstream from county road bridge across Big Beef Harbor and 1.9 mi (3.1 km) east of Seabeck.

DRAINAGE AREA.--13.8 mi² (35.7 km²).

PERIOD OF RECORD.--August 1969 to current year.

REVISED RECORDS.--WRD WA-76-1: 1975 (M).

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records fair. Water is diverted by the University of Washington Research station to fill fish tanks and is returned to the creek above the gage. Flow may be partially regulated by Lake Symington 4.6 mi (7.4 km) upstream.

AVERAGE DISCHARGE.--8 years, 40.0 ft³/s (1.133 m³/s), 39.36 in/yr (1,000 mm/yr), 28,980 acre-ft/yr (35.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 757 ft³/s (21.4 m³/s) Dec. 7, 1970, gage height, 4.92 ft (1.500 m); maximum gage height, 5.74 ft (1.750 m) Jan. 16, 1974; minimum discharge, 2.3 ft³/s (0.065 m³/s) Aug. 30, 31, 1970, Sept. 2, 1974, but may have been less during period of no gage-height record Sept. 3-30, 1974; minimum gage height, 1.79 ft (0.546 m) Aug. 31, Sept. 1, 1972.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 275 ft³/s (7.79 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 8	2300	*592	16.8	*5.28	1.609

Minimum discharge, 3.0 ft³/s (0.085 m³/s) Aug. 7, 8, 9, 16; minimum gage height, 3.00 ft (0.914 m) Dec. 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	11	8.0	11	8.4	57	14	9.0	25	4.8	4.8	6.0
2	7.1	10	8.0	10	8.9	48	14	9.0	19	4.8	4.2	6.0
3	7.1	9.3	7.1	9.3	8.9	48	13	11	16	4.8	3.9	7.0
4	6.7	8.4	6.7	8.9	8.9	42	13	11	19	6.0	3.6	8.0
5	6.2	8.0	6.7	8.4	8.4	35	12	10	17	7.0	3.6	7.8
6	6.2	8.0	6.2	8.0	8.4	35	12	10	14	6.0	3.3	6.5
7	6.2	7.5	6.2	7.5	8.4	368	12	9.5	12	5.7	3.3	5.7
8	6.2	7.1	6.7	7.1	8.0	455	12	9.5	10	5.4	3.0	4.8
9	6.2	6.7	6.2	7.1	8.0	488	12	9.0	9.5	5.1	3.3	4.5
10	6.2	6.7	6.2	6.7	17	291	11	9.0	9.0	5.1	4.8	4.2
11	6.7	6.7	6.2	7.1	17	171	10	10	8.5	4.8	4.2	4.2
12	6.7	6.7	6.2	8.9	16	118	10	9.5	8.0	4.8	3.6	4.2
13	6.2	6.2	6.2	8.9	12	83	10	8.5	7.5	4.8	3.3	4.2
14	6.2	6.2	6.2	8.9	12	60	10	8.5	7.0	4.8	3.3	4.2
15	6.2	6.2	6.2	8.9	12	49	12	8.0	7.0	4.5	3.3	4.2
16	6.2	6.7	6.2	8.9	11	40	12	8.0	7.0	4.5	3.3	3.9
17	5.8	6.7	6.2	9.3	10	33	12	8.0	6.5	4.5	3.9	3.6
18	5.8	6.7	5.8	11	9.3	30	11	8.0	6.0	4.5	3.9	3.9
19	5.8	6.7	5.8	14	9.3	26	10	7.5	6.0	4.5	3.6	6.0
20	5.8	6.7	5.8	14	12	23	10	7.5	6.0	4.2	3.3	7.0
21	5.8	6.7	5.8	14	18	22	10	7.5	6.0	4.2	3.3	6.0
22	5.8	6.7	5.8	14	28	21	11	7.0	5.7	4.0	3.3	6.0
23	5.8	6.2	6.7	12	24	22	11	7.0	5.4	3.9	3.9	7.0
24	7.1	6.2	4.9	11	19	23	10	7.5	5.4	3.9	4.8	7.0
25	7.5	6.2	4.9	11	19	22	10	7.0	5.4	3.9	6.0	7.5
26	6.7	6.2	21	10	23	21	10	8.5	5.4	3.6	6.0	7.5
27	6.7	6.2	19	9.3	25	19	10	9.0	5.1	3.6	6.0	7.0
28	8.4	6.2	16	8.9	49	17	10	10	5.1	3.6	6.0	9.0
29	8.0	6.2	14	8.4	---	17	9.5	15	5.1	3.3	6.0	7.0
30	7.1	8.0	12	8.4	---	15	9.5	13	4.8	3.3	7.0	7.5
31	16	---	10	8.4	---	14	---	17	---	5.1	7.5	---
TOTAL	209.7	213.0	248.9	299.3	418.9	2713	333.0	289.0	273.4	143.0	133.3	177.4
MEAN	6.76	7.10	8.03	9.65	15.0	87.5	11.1	9.32	9.11	4.61	4.30	5.91
MAX	16	11	21	14	49	488	14	17	25	7.0	7.5	9.0
MIN	5.3	6.2	4.9	6.7	8.0	14	9.5	7.0	4.8	3.3	3.0	3.6
CFSM	.49	.51	.58	.70	1.09	6.34	.80	.68	.66	.33	.31	.43
IN.	.57	.57	.67	.81	1.13	7.31	.90	.78	.74	.39	.36	.48
AC-FT	416	422	494	594	831	5380	661	573	542	284	264	352

CAL YR 1976 TOTAL 10973.4 MEAN 30.0 MAX 347 MIN 4.7 CFSM 2.17 IN 29.50 AC-FT 21770
WTR YR 1977 TOTAL 5451.9 MEAN 14.9 MAX 488 MIN 3.0 CFSM 1.08 IN 14.70 AC-FT 10810

12079980 DESCHUTES RIVER AT HENDERSON BOULEVARD NEAR OLYMPIA, WA

LOCATION.--Lat 46°59'44", long 122°52'47", in NE¼NW¼ sec.1, T.17 N., R.2 W., Thurston County, Hydrologic Unit 17110016, at bridge on Henderson Boulevard, 1.2 mi (1.9 km) east of Tumwater, 4.5 mi (7.2 km) southeast of Olympia and at mile 4.6 (7.4 km).

DRAINAGE AREA.--About 159 mi² (412 km²).

PERIOD OF RECORD.--Water years 1972, October 1976 to September 1977 (discontinued).

REMARKS.--Prior to October 1976 published as Deschutes River near Olympia.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
06...	1515	97	120	7.8	13.8	--	5	11.8	.34	.02	.02	.01
20...	1235	94	128	7.8	8.4	21	4	12.7	.37	.04	.02	.00
NOV												
01...	1505	204	125	7.6	10.3	33	7	10.7	.28	.06	.05	.01
15...	1530	96	129	7.5	9.7	33	25	10.6	.42	.06	.02	.00
DEC												
06...	1505	94	130	7.6	7.1	8	2	12.2	.46	.03	.02	.01
13...	1405	108	120	7.7	7.7	21	3	12.8	.42	.03	.02	.01
JAN												
03...	1345	138	121	7.5	4.8	20	2	12.1	.56	.04	.03	.00
17...	1500	124	128	7.3	8.6	21	3	11.2	.42	.06	.03	.02
FEB												
07...	1620	90	123	7.9	7.6	17	1	12.1	.29	.03	.02	.01
14...	1450	147	111	7.8	8.6	29	4	12.3	.29	.06	.03	.01
MAR												
07...	1435	306	96	7.2	7.9	46	7	11.0	.45	.05	.04	.01
21...	1530	251	100	7.5	9.0	29	5	11.3	.48	.06	.04	.01
APR												
04...	1500	210	103	7.4	11.4	17	3	11.1	.31	.03	.03	.01
18...	1450	180	100	7.7	11.6	21	3	11.5	.24	.04	.02	.01
MAY												
02...	1405	134	110	7.0	13.3	13	1	10.3	.28	.02	.02	.01
16...	1525	180	105	7.2	11.0	25	2	11.0	.22	.05	.02	.00
JUN												
06...	1530	303	80	7.6	19.5	33	5	10.3	.24	.07	.04	.01
20...	1530	124	113	7.6	15.2	13	2	10.4	.23	.04	.02	.01
JUL												
11...	1405	84	120	7.7	16.0	17	2	9.8	.32	.11	.05	.01
25...	1630	58	121	7.3	19.9	13	3	11.7	.36	.06	.03	.01
AUG												
08...	1535	67	132	7.5	21.0	13	2	10.1	.35	.05	.08	.01
22...	1545	61	136	7.1	16.4	17	2	10.1	.34	.04	.03	.01
SEP												
12...	1510	74	128	7.4	16.6	25	2	12.1	.28	.04	.02	.01
26...	1515	202	102	6.9	13.7	29	5	10.8	.26	.07	.07	.00

12080012 DESCHUTES RIVER AT TUMWATER, WA

LOCATION.--Lat 47°00'53", long 122°54'07", in SW¼SW¼ sec.26, T.18 N., R.2 W., Thurston County, Hydrologic Unit 17110016, at old U.S. Highway 99 bridge, 0.3 mi (0.5 km) upstream from mouth, and 2.5 mi (4.0 km) south of Olympia.

DRAINAGE AREA.--161 mi^2 (417 km^2).

PERIOD OF RECORD.--Water years 1963-70, October 1976 to September 1977 (discontinued).

REMARKS.--Prior to October 1976 published as 12080000 "near Olympia."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
06...	1450	110	125	8.1	15.1	--	3	12.4	.28	.02	.06	.02
20...	1210	100	133	7.9	9.5	21	4	12.8	.30	.04	.05	.03
NOV												
01...	1450	245	135	7.7	11.6	33	7	10.8	.25	.06	.08	.02
15...	1505	100	135	7.7	11.3	46	75	10.9	.39	.06	.05	.00
DEC												
06...	1445	96	135	7.5	8.0	8	4	12.7	.45	.04	.04	.03
13...	1350	110	130	7.0	8.8	17	3	12.9	.30	.03	.04	.01
JAN												
03...	1320	145	122	7.5	5.3	20	2	12.2	.56	.06	.03	.01
17...	1440	127	137	7.5	9.9	17	4	11.2	.38	.06	.06	.02
FEB												
07...	1600	93	123	8.0	8.1	17	2	11.8	.34	.03	.03	.01
14...	1430	159	120	7.8	9.7	25	4	12.6	.30	.05	.04	.01
MAR												
07...	1415	320	96	7.1	8.2	55	10	11.1	.48	.04	.05	.01
21...	1515	265	93	7.5	9.5	29	4	11.3	.49	.08	.04	.01
APR												
04...	1440	231	109	7.5	12.5	13	3	10.9	.26	.04	.04	.02
18...	1430	201	105	7.6	11.1	21	2	11.7	.24	.04	.02	.00
MAY												
02...	1345	137	110	7.0	13.3	13	2	10.9	.53	.03	.02	.00
16...	1505	192	105	7.3	11.4	29	3	11.0	.23	.05	.03	.00
JUN												
06...	1510	410	85	7.6	20.0	33	5	10.4	.24	.09	.04	.01
20...	1515	154	120	7.3	16.0	13	2	10.9	.19	.07	.05	.03
JUL												
11...	1345	102	122	7.7	17.1	13	2	10.2	.57	.36	.16	.04
25...	1600	64	131	7.6	21.4	17	4	9.3	.39	.15	--	.03
AUG												
08...	1455	75	137	7.8	22.1	21	2	10.6	.29	.06	.11	.03
22...	1510	70	139	7.5	17.1	13	2	11.2	.16	.03	.10	.04
SEP												
12...	1440	80	125	7.9	18.3	21	2	10.5	.22	.04	.06	.03
26...	1450	255	105	7.2	14.3	46	5	11.3	.26	.08	.05	.01

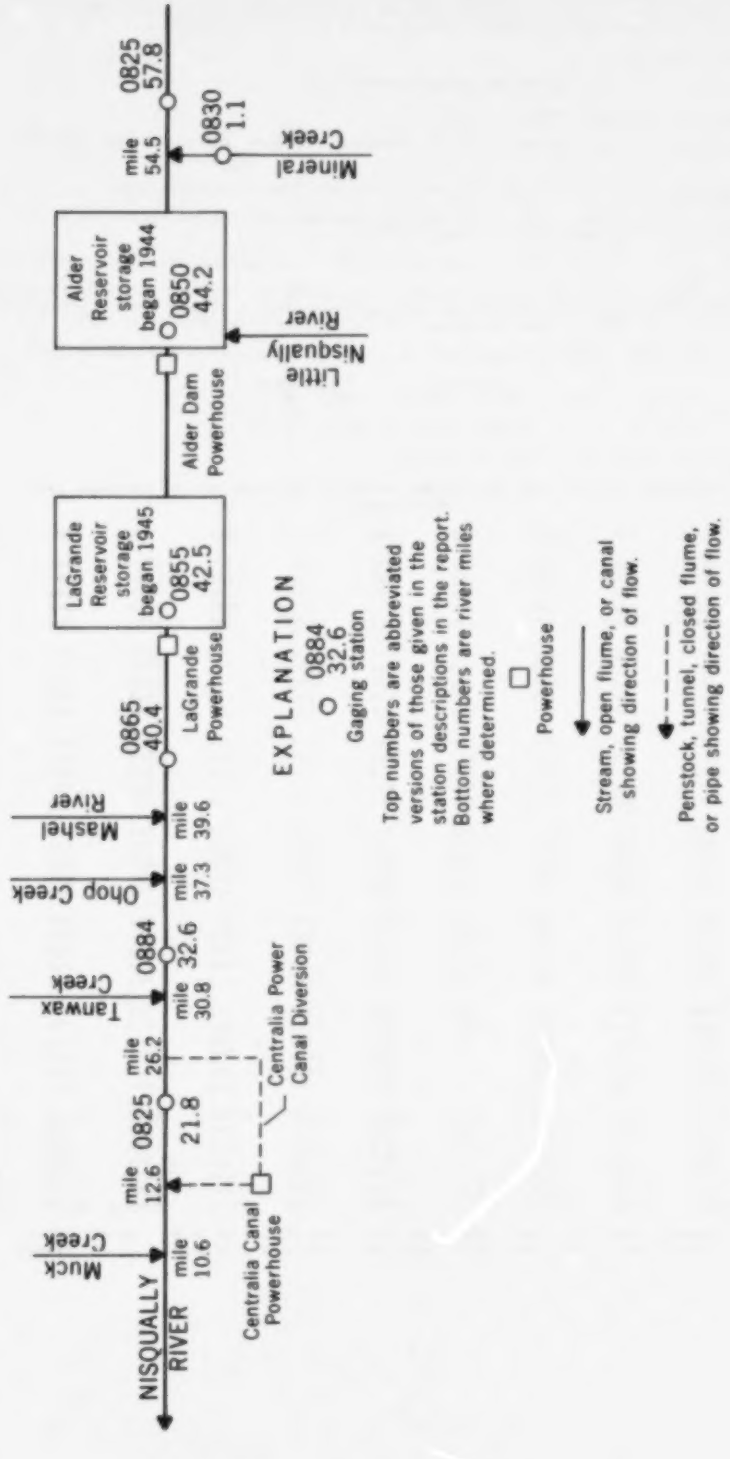
NISQUALLY RIVER
Muck Creek
mile 10.6
Centralia Canal Powerhouse
mile 12.6
0825 21.8
Centralia Power Canal Diversion
mile 26.2
Tanwax Creek
mile 30.8
0884 32.6
Ohop Creek
mile 37.3
Mashel River
mile 39.6
0865 40.4
LaGrande Powerhouse
LaGrande Reservoir storage began 1945
0855 42.5
Alder Dam Powerhouse
Little Nisqually River
Alder Reservoir storage began 1944
0850 44.2
mile 54.5
Mineral Creek
0830 1.1
0825 57.8
EXPLANATION
0884 32.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 9. Gaging stations in Nisqually River basin.

12082500 NISQUALLY RIVER NEAR NATIONAL, WA

LOCATION.--Lat 46°45'10", long 122°04'57", in SW¼SW¼ sec.29, T.15 N., R.6 E., Pierce County, Hydrologic Unit 17110015, on right bank 100 ft (30 m) downstream from old railroad bridge, 1.2 mi (1.9 km) west of National, 3.3 mi (5.3 km) upstream from Mineral Creek, and at mile 57.8 (93.0 km).

DRAINAGE AREA.--133 mi² (344 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1716: 1943(M), 1947(P), 1950-51, 1956(M). WRD Wash. 1974: 1968(M), 1969(M), 1972(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,450 ft (442 m), from river-profile map.

REMARKS.--Water-discharge records good. Small diversions for domestic use. Slight regulation at low flow by powerplant of Mount Rainier National Park on Paradise River.

AVERAGE DISCHARGE.--35 years, 785 ft³/s (22.23 m³/s), 80.15 in/yr (2,036 mm/yr), 568,700 acre-ft/yr (701 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s (425 m³/s) Jan. 15, 1974 from rating curve extended above 7,000 ft³/s (198 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 11.77 ft (3.587 m) Nov. 23, 1959; minimum discharge, 108 ft³/s (3.06 m³/s) Dec. 1, 3, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Sept. 4	1645	*1,910	54.1	*4.66	1.420

Minimum daily discharge, 210 ft³/s (5.95 m³/s) Jan. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	525	540	255	356	275	374	530	1010	1260	606	722	530
2	448	420	250	351	262	362	460	1130	1050	596	746	525
3	350	380	245	317	255	384	440	1170	927	444	790	650
4	290	362	235	296	262	350	470	1020	1220	392	750	1290
5	288	338	230	265	270	332	590	860	1190	356	780	1090
6	308	311	232	250	270	347	824	746	1360	341	710	735
7	350	296	293	240	240	444	1160	716	1380	347	678	665
8	412	377	308	225	242	572	1350	740	1220	432	698	585
9	412	350	299	210	238	638	1130	728	948	424	716	554
10	420	317	275	210	323	505	902	800	890	444	722	572
11	368	299	267	222	365	448	776	770	860	602	758	585
12	341	285	268	232	511	465	698	680	800	716	836	595
13	359	272	255	222	511	412	752	638	848	560	830	620
14	359	260	250	220	418	384	668	656	830	584	776	585
15	353	305	262	245	381	362	626	638	794	656	776	482
16	335	716	270	311	360	347	638	608	746	698	758	399
17	328	704	260	629	351	329	566	628	824	662	800	366
18	293	644	267	1160	332	329	525	656	878	560	800	354
19	293	490	258	853	311	335	480	632	854	490	800	431
20	296	420	245	632	308	320	460	620	794	535	842	536
21	296	380	242	530	320	314	470	740	752	632	908	595
22	285	359	235	463	331	320	566	740	788	728	764	496
23	267	338	255	424	290	347	782	770	698	728	696	527
24	250	329	235	385	287	350	1110	686	710	740	812	605
25	440	347	332	350	285	341	1410	626	794	776	656	625
26	392	299	674	335	285	368	1310	722	720	734	602	610
27	314	275	710	310	299	568	1070	650	710	752	505	545
28	296	270	560	293	371	460	997	632	704	758	540	500
29	285	267	485	288	---	420	1040	596	716	596	680	500
30	260	260	424	285	---	380	1000	566	644	590	710	550
31	408	---	380	270	---	420	---	842	---	674	578	---
TOTAL	10601	11210	9740	11379	8953	12327	23740	23008	26917	18233	22723	17702
MEAN	342	374	314	367	320	398	791	742	897	588	733	590
MAX	525	716	710	1160	511	638	1410	1170	1380	776	908	1290
MIN	250	260	230	210	238	314	440	566	644	341	505	354
CFSM	2.57	2.81	2.36	2.76	2.41	2.99	5.95	5.58	6.74	4.42	5.51	4.44
IN.	2.97	3.14	2.72	3.18	2.50	3.45	6.64	6.44	7.53	5.10	6.36	4.95
AC-FT	21030	22240	19320	22570	17760	24450	47090	45640	53390	36170	45070	35110

CAL YR 1976 TOTAL 266677 MEAN 729 MAX 5280 MIN 230 CFSM 5.48 IN 74.59 AC-FT 529000
WTR YR 1977 TOTAL 196533 MEAN 538 MAX 1410 MIN 210 CFSM 4.05 IN 54.97 AC-FT 389800

12082500 NISQUALLY RIVER NEAR NATIONAL, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1951 to current year.

INSTRUMENTATION.--Temperature recorder since October 1951.

REMARKS.--Interruptions in the record were due either to malfunctions of the instrument, or siltation over the probe. Temperature records missing Oct. 1 to Feb. 23.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 18.5°C July 13, 1961, July 3, 1970; minimum, (1961-63, 1965-77) 0.0°C on many days during winter months of most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 17.5°C Aug. 7; minimum recorded, 2.5°C Mar. 3.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	4.0	3.5	4.0	---	---	---	8.0	6.0	7.0
2	---	---	---	3.5	3.5	3.5	---	---	---	7.5	6.5	6.5
3	---	---	---	3.5	2.5	3.0	---	---	---	7.0	5.0	6.0
4	---	---	---	3.5	3.0	3.5	---	---	---	7.0	4.5	5.5
5	---	---	---	4.5	3.5	3.5	---	---	---	8.0	4.5	6.0
6	---	---	---	4.5	3.5	4.0	---	---	---	9.5	5.0	7.0
7	---	---	---	4.0	4.0	4.0	---	---	---	9.5	5.0	7.0
8	---	---	---	4.0	3.5	4.0	---	---	---	11.0	6.0	8.0
9	---	---	---	3.5	3.5	3.5	---	---	---	12.5	5.5	9.0
10	---	---	---	3.5	3.0	3.5	---	---	---	8.5	6.0	7.5
11	---	---	---	4.5	3.5	4.0	---	---	---	9.5	5.5	7.0
12	---	---	---	4.5	4.0	4.0	---	---	---	11.0	4.5	7.5
13	---	---	---	4.0	4.0	4.0	---	---	---	10.5	6.5	8.5
14	---	---	---	4.0	4.0	4.0	8.0	4.0	5.5	9.5	6.5	8.0
15	---	---	---	4.0	3.5	4.0	7.0	5.0	6.0	9.5	6.0	7.5
16	---	---	---	4.5	4.0	4.0	6.0	4.5	5.5	7.5	6.0	7.0
17	---	---	---	4.5	4.0	4.0	7.5	4.0	5.5	7.5	6.5	7.0
18	---	---	---	4.5	4.0	4.5	7.5	4.5	5.5	8.5	6.0	7.5
19	---	---	---	4.5	4.5	4.5	8.5	4.0	6.0	11.0	6.5	8.5
20	---	---	---	5.0	4.5	4.5	9.0	4.0	6.5	11.0	7.0	9.0
21	---	---	---	6.0	4.5	5.0	7.5	6.0	7.0	11.0	8.0	9.0
22	---	---	---	---	---	---	11.5	5.5	8.0	12.5	7.0	9.5
23	---	---	---	---	---	---	11.5	5.5	8.0	9.0	7.0	8.0
24	4.5	4.0	4.0	---	---	---	11.5	6.0	8.5	10.0	6.5	8.0
25	4.0	3.0	3.5	---	---	---	8.5	5.5	7.0	10.5	5.5	8.5
26	4.0	3.5	3.5	---	---	---	8.0	5.5	6.5	9.5	7.0	8.0
27	---	---	---	5.0	4.0	5.0	11.0	5.0	7.5	---	---	---
28	4.5	4.0	4.0	5.5	4.5	5.0	11.0	5.5	8.0	---	---	---
29	---	---	---	5.5	5.0	5.0	10.0	6.5	8.0	---	---	---
30	---	---	---	5.5	4.5	5.0	11.0	5.5	8.0	---	---	---
31	---	---	---	5.5	5.0	5.0	---	---	---	---	---	---
MONTH	4.5	3.0	4.0	6.0	2.5	4.0	11.5	4.0	7.0	12.5	4.5	7.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---				---	---	---	15.0	7.0	11.0
2	---	---	---				---	---	---	11.0	9.0	10.0
3	---	---	---				17.0	7.5	12.0	12.5	8.5	10.0
4	---	---	---				17.0	8.0	12.0	11.0	9.0	10.0
5	---	---	---				14.0	8.0	10.5	13.0	7.5	10.0
6	---	---	---				16.5	8.0	12.0	13.0	6.5	9.5
7	---	---	---				17.5	8.0	12.5	12.0	7.0	9.5
8	---	---	---				17.0	8.0	12.0	13.0	7.0	9.5
9	---	---	---				16.5	7.5	11.5	13.5	7.0	9.5
10	---	---	---				16.5	7.5	11.5	13.5	6.5	9.5
11	---	---	---				16.5	7.5	11.5	13.5	6.5	10.0
12	---	---	---				16.5	8.0	11.5	14.5	6.5	10.0
13	---	---	---				16.5	7.5	11.5	14.5	7.0	10.5
14	---	---	---				16.0	7.5	11.0	12.5	7.5	9.5
15	---	---	---				16.5	7.5	11.0	9.5	7.0	8.5
16	---	---	---				17.0	7.5	11.5	10.5	7.0	8.5
17	---	---	---				16.0	8.0	11.5	11.0	6.5	8.5
18	---	---	---				15.5	7.5	11.0	10.5	8.0	9.0
19	---	---	---				15.5	8.0	11.0	10.0	8.5	9.0
20	---	---	---				15.5	7.5	10.5	9.0	8.0	8.5
21	11.5	8.5	10.0				---	---	---	10.0	7.5	8.5
22	---	---	---				---	---	---	11.0	5.5	8.0
23	---	---	---				---	---	---	8.5	7.5	7.5
24	---	---	---				---	---	---	9.0	7.0	8.0
25	---	---	---				10.0	8.0	9.0	10.0	7.0	8.0
26	---	---	---				10.5	8.5	9.5	10.5	6.0	8.0
27	---	---	---				12.0	8.5	10.0	9.5	7.0	8.0
28	---	---	---				11.0	9.0	10.0	10.0	7.5	8.5
29	---	---	---				10.0	8.0	9.0	8.5	7.5	8.0
30	---	---	---				13.0	8.5	10.0	8.5	7.0	8.0
31	---	---	---				14.5	7.5	10.5	---	---	---
MONTH	---	---	---				17.5	7.5	11.0	15.0	5.5	9.0
YEAR	17.5	2.5	7.5									

12083000 MINERAL CREEK NEAR MINERAL, WA

LOCATION.--Lat 46°44'16", long 122°08'33", in NE¼SW¼ sec. 35, T.15 N., R.5 E., Lewis County, Hydrologic Unit 17110015, on right bank 0.5 mi (0.8 km) downstream from CMSTP&P Railroad bridge, 2.3 mi (3.7 km) northeast of Mineral, and at mile 1.1 (1.8 km).

DRAINAGE AREA.--75.2 mi² (194.8 km²).

PERIOD OF RECORD.--June 1942 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WRD Wash. 1974, 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,340 ft (408 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--35 years, 379 ft³/s (10.73 m³/s) 68.44 in/yr (1,738 mm/yr) 274,600 acre-ft/yr (339 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,740 ft³/s (276 m³/s) Jan. 20, 1972, gage height, 10.87 ft (3.313 m); minimum, 16 ft³/s (0.45 m³/s) Aug. 30, 31, 1970; minimum gage height, 1.40 ft (0.427 m) Sept. 22, 23, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,700 ft³/s (76.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 8	1200	*902	25.5	*6.16	1.878

Minimum discharge, 22 ft³/s (0.62 m³/s) Aug. 17, gage height, 3.00 ft (0.914 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	260	81	148	108	341	335	299	572	82	37	93
2	42	168	78	140	100	299	314	317	488	82	36	79
3	46	134	76	127	94	329	308	420	428	82	35	105
4	41	116	74	119	89	269	344	460	590	83	34	347
5	40	103	70	105	87	235	440	406	496	84	36	201
6	38	94	69	99	84	258	605	367	432	92	36	180
7	37	87	78	95	82	364	752	374	374	78	33	139
8	35	85	110	86	80	572	860	464	326	71	32	116
9	35	80	121	80	79	690	695	420	290	70	30	102
10	42	76	100	88	140	472	545	402	255	69	29	93
11	48	71	95	101	215	381	464	378	235	67	29	85
12	41	68	97	126	197	406	420	323	215	68	28	79
13	37	65	101	116	210	344	448	293	197	68	27	74
14	36	64	96	106	182	308	399	298	182	64	27	70
15	35	79	97	119	163	275	381	293	168	60	26	67
16	34	116	96	148	150	252	392	278	157	58	25	65
17	33	133	95	192	140	227	353	290	147	59	25	64
18	32	150	106	275	130	220	320	335	139	57	24	68
19	32	124	96	290	121	222	290	305	131	54	25	96
20	31	112	88	237	115	206	272	281	126	51	25	192
21	31	105	82	201	180	210	278	281	123	50	25	201
22	30	97	80	176	199	235	320	255	117	49	26	201
23	30	93	96	157	172	293	378	272	111	47	39	217
24	35	92	87	144	148	299	444	269	107	46	112	290
25	176	123	93	133	148	269	513	245	102	44	100	296
26	130	105	347	126	154	317	504	317	97	43	78	260
27	87	95	456	117	178	690	409	290	93	42	62	215
28	77	89	305	111	341	492	364	332	91	42	61	190
29	74	86	242	106	---	392	341	338	88	42	101	192
30	65	84	199	102	---	335	317	311	85	40	225	178
31	178	---	170	105	---	314	---	420	---	39	126	---
TOTAL	1666	3154	3981	4275	4086	10508	12805	10333	6962	1883	1554	4715
MEAN	53.7	105	128	138	146	339	427	333	232	60.7	50.1	157
MAX	178	260	456	290	341	690	860	464	590	92	225	347
MIN	30	64	69	80	79	206	272	245	85	39	24	64
CFSM	.71	1.40	1.70	1.84	1.94	4.51	5.68	4.43	3.09	.81	.67	2.09
IN.	.82	1.56	1.97	2.11	2.02	5.20	6.33	5.11	3.44	.93	.77	2.33
AC-FT	3300	6260	7900	8480	8100	20840	25400	20500	13810	3730	3080	9350

CAL YR 1976 TOTAL 112305 MEAN 307 MAX 4170 MIN 30 CFSM 4.08 IN 55.56 AC-FT 222800
WTR YR 1977 TOTAL 65922 MEAN 181 MAX 860 MIN 24 CFSM 2.41 IN 32.61 AC-FT 130800

12083400 NISQUALLY RIVER AT ELBE, WA

LOCATION.--Lat 46°45'47", long 122°11'27", in NW¼NW¼ sec.28, T.15 N., R.5 E., Pierce County, Hydrologic Unit 17110015, at State Highway 7 crossing, at Elbe and at mile 51.7 (83.2 km^2).

DRAINAGE AREA.--22.0 mi^2 (58.5 km^2).

PERIOD OF RECORD.--Water years 1973 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
15...	1000	340	76	7.6	5.7	2	12.3	190	.05	.01
APR										
13...	0925	1210	51	7.6	6.0	1	11.9	836	.10	.01
JUN										
15...	0930	980	48	7.0	9.2	20	11.0	>20000	.01	.07
SEP										
14...	1010	710	51	6.8	19.2	80	10.7	8600	.02	.38

12085000 ALDER RESERVOIR AT ALDER, WA

LOCATION.--Lat 46°48'09", long 122°18'37", in SE¼NW¼ sec.9, T.15 N., R.4 E., Thurston County, Hydrologic Unit 17110015, near left end of Alder Dam on Nisqually River, 1.0 mi (1.6 km) west of Alder, 1.7 mi (2.7 km) upstream from La Grand Dam, 4.6 mi (7.4 km) upstream from Mashel River, and at mile 44.2 (71.1 km).

DRAINAGE AREA.--286 mi² (741 km²).

WATER-CONTENTS RECORDS

PERIOD OF RECORD.--November 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft (2.32 m) below mean sea level (levels by city of Tacoma). Prior to July 8, 1946, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete-arch dam; storage began Nov. 7, 1944; dam completed in 1945. Capacity, 99,170 acre-ft (122 hm³) between gage heights 1,114 ft (339.5 m), lower limit of operating range, and 1,177 ft (358.7 m), gage height of spillway. Water can be controlled by spillway gates to gage height 1,207 ft (367.9 m), usable capacity 179,600 acre-ft (221 hm³). Dead storage below gage height 1,114 ft (339.5 m), 52,110 acre-ft (64.3 hm³). Figures given herein represent total contents. Water is used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 233,848 acre-ft (288 hm³) Dec. 4, 1975, gage height 1,207.68 ft (368.101 m); minimum since reservoir first filled, 86,710 acre-ft (107 hm³), Mar. 26, 1969, gage height, 1,142.77 ft (348.316 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 230,872 acre-ft (285 hm³) July 28, gage height, 1,206.72 ft (367.808 m); minimum, 113,980 acre-ft (141 hm³) Dec. 25, gage height, 1,159.10 ft (353.294 m).

Capacity table (gage height, in feet, and total contents, in acre-feet)
(Based on project surveys and maps by city of Tacoma in 1944)

1,144	88,510	1,170	135,800	1,200	210,840
1,150	97,910	1,180	158,260	1,207.7	233,910
1,160	115,690	1,190	183,270		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217210	147040	129236	121940	123860	128610	133638	164210	216031	225790	228190	228220
2	216502	147566	128327	122100	123660	129277	133104	166085	219130	225800	227710	227200
3	215028	147179	127340	122160	123400	130518	132772	168392	221200	225640	227440	226450
4	214755	146586	126220	122100	123120	130907	132608	170678	223120	225040	227000	228130
5	213247	145993	125140	122360	122940	131374	132937	172234	225100	224380	226870	229136
6	210869	145264	124160	121341	122960	131722	134344	173664	227110	224110	226390	228370
7	207794	144488	123280	120804	122240	133329	136944	174944	227090	224300	226060	226700
8	204392	143863	122780	120366	121900	136736	140795	176145	227470	224290	225250	224920
9	201144	143171	122220	119769	121421	140359	143506	177599	225940	224560	225010	222790
10	197867	142391	121600	119098	121720	141972	145264	179312	224950	224830	224770	220750
11	194695	141383	120923	118842	122100	142703	146221	181434	224880	225340	224350	218920
12	191459	140533	120147	118723	122800	143260	147110	182556	223330	226000	224770	216880
13	188065	139563	119413	118507	123700	143283	147954	183831	222820	226120	224920	215016
14	184672	138625	118664	118172	124200	142658	148592	185335	222610	226570	225220	212696
15	181306	137755	117896	117935	124500	142125	149141	186775	222640	227320	225250	210289
16	178100	137965	117153	118073	124640	141165	149762	188039	223000	227890	225160	207969
17	176069	138242	116645	119137	124860	140490	150084	189444	223150	228430	225430	205292
18	172409	138514	116294	121401	124920	139520	149969	190984	223810	228490	225580	202678
19	168628	138327	115885	123340	124700	138625	150061	192383	224380	228490	225760	200158
20	165386	137859	115443	124540	124960	137776	149900	193730	224650	228490	226390	198534
21	162386	137298	115177	125320	125160	136674	149946	194883	224890	228610	227380	196620
22	159975	136715	114770	125740	125600	135613	150015	196388	225040	229136	228100	195070
23	157722	136250	114379	126180	125780	135426	150682	198041	225200	229446	228430	193730
24	155687	135362	114037	125980	125840	134882	152481	199375	225340	229018	229291	192190
25	153382	134656	114856	125820	126180	134282	155035	202854	225430	230376	229663	190801
26	151073	133886	115924	125620	126360	133370	157230	202652	225670	230531	229539	189601
27	150176	133840	118408	125300	126580	134386	158659	204392	225580	230624	229074	187910
28	149463	132175	119749	124720	127480	134552	159764	206136	225640	230531	228640	186259
29	148433	131272	120764	124620	---	134656	161042	207824	225520	229973	229043	184596
30	147475	130273	121401	124160	---	134302	162506	209071	225730	229229	229632	182786
31	147384	---	121720	124160	---	133596	---	211710	---	228580	229260	---
MAX	217210	147040	129236	126180	127480	143283	162506	211710	227090	230624	229663	229136
MIN	147384	130273	114037	117935	121421	128610	132608	164210	216031	224110	224350	182786
†	1,175.30	1,167.32	1,163.06	1,164.28	1,165.94	1,168.94	1,181.79	1,200.30	1,205.03	1,205.98	1,206.20	1,189.81
‡	-70,126	-17,111	-8,553	+2,440	+3,320	+6,116	+28,910	+49,204	+14,020	+2,850	+680	-46,474

CAL YR 1976: .... ‡-88,076
WTR YR 1977: .... ‡-34,724

† Gage height, in feet, at end of month.
‡ Change of contents, in acre-feet.

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
15...	1025	1.0	50	7.1	9.0	10	10.5	8	.03	.03
15...	1035	20	49	7.2	8.2	10	10.5	3	.03	.02
15...	1045	50	49	7.3	8.1	10	10.4	<1	.03	.02
15...	1055	100	54	7.2	7.5	9	10.5	4	.03	.02
APR										
13...	1025	1.0	53	7.6	9.4	3	11.7	<1	.12	.02
13...	1035	20	54	7.5	8.9	4	11.7	B3	.12	.02
13...	1045	50	51	7.5	6.1	5	11.6	B9	.12	.01
13...	1055	100	53	7.4	5.4	5	11.8	<1	.13	.01
JUN										
15...	1040	1.0	62	7.2	15.4	2	10.3	550	.07	.01
15...	1045	20	60	7.3	14.7	3	10.2	140	.00	.01
15...	1050	50	65	7.2	10.7	1	9.7	B100	.04	.00
15...	1055	100	68	7.2	7.9	1	10.0	>20000	.00	.00
SEP										
14...	1030	1.0	49	7.0	17.5	15	8.8	B120	.00	.04
14...	1035	20	47	6.9	16.3	15	8.4	120	.00	.04
14...	1040	50	45	6.7	14.8	55	8.0	290	.01	.11
14...	1045	100	46	6.7	14.1	35	7.7	200	.01	.12

B Results based upon colony counts outside the ideal range.

NISQUALLY RIVER BASIN

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA

LOCATION.--Lat 46°49'23", long 122°16'13", in SW¼SE¼ sec.33, T.16 N., R.4 E., Thurston County, Hydrologic Unit 17110015, at left end of gate control structure, 1.1 mi (1.8 km) southeast of La Grande, 1.7 mi (2.7 km) downstream from Alder Dam, and at mile 42.5 (68.4 km).

DRAINAGE AREA.--289 mi² (749 km²).

PERIOD OF RECORD.--January 1945 to current year. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Monthend contents January 1945 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft (2.320 m) below mean sea level (levels by city of Tacoma). Prior to June 12, 1947, monthend gage heights furnished by city of Tacoma from temporary gages in pool above dam.

REMARKS.--Reservoir is formed by concrete gravity dam completed in 1944; storage began in February 1945. Usable storage, 1,053 acre-ft (1.30 hm³) between gage heights 910 ft (277.4 m), minimum practical head, and 935 ft (285.0 m), normal reservoir level. Dead storage below elevation 910 ft (277.4 m), 1,629 acre-ft (2.01 hm³). Figures given herein represent total contents. Water used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,760 acre-ft (3.40 hm³), May 14, 1950, gage height, 936.4 ft (285.41 m); minimum observed since reservoir first filled, 1,370 acre-ft (1.69 hm³) Aug. 24, 1956, gage height, 900.0 ft (274.32 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,723 acre-ft (3.36 hm³) Feb. 24, gage height, 935.73 ft (285.211 m); minimum contents, 1,874 acre-ft (2.31 hm³) Sept. 5, gage height, 917.34 ft (279.606 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	928.75	2,354	-
Oct. 31	929.89	2,412	+58
Nov. 30	929.50	2,392	-20
Dec. 31	931.02	2,469	+77
CAL YR 1976	-	-	+41
Jan. 31	930.17	2,426	-43
Feb. 28	930.50	2,442	+16
Mar. 31	930.19	2,427	-15
Apr. 30	931.02	2,469	+42
May 31	931.11	2,474	+5
June 30	927.00	2,270	-204
July 31	928.77	2,356	+86
Aug. 31	929.22	2,378	+22
Sept. 30	931.51	2,495	+117
WTR YR 1977			+141

12086500 NISQUALLY RIVER AT LA GRANDE, WA

LOCATION.--Lat 46°50'25", long 122°19'38", in NW¼SE¼ sec.29, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on right bank 0.4 mi (0.6 km) downstream from city of Tacoma powerplant, 0.6 mi (1.0 km) northeast of La Grande, 0.8 mi (1.3 km) upstream from Mashel River, and at mile 40.4 (65.0 km).

DRAINAGE AREA.--292 mi² (756 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1906 to October 1911, November to December 1911 (gage heights only), October 1919 to September 1931, October 1943 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" 1906-10, and as "near La Grande" 1912, 1919-31.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50. WRD Wash. 1974: 1956(M), 1959-61(M), 1965.

GAGE.--Water-stage recorder. Altitude of gage is 490 ft (149 m), from river-profile map. See WSP 1932 for history of changes prior to Feb. 8, 1945.

REMARKS.--Water-discharge records good. No gage-height Dec. 18 to Feb. 1, Feb. 13 to Apr. 4, daily discharge computed from La Grande powerplant records furnished by Tacoma City Light. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta 12085000) since November 1944, and by La Grande Reservoir (see preceding page) since February 1945. All diversions returned to river above gage.

AVERAGE DISCHARGE.--51 years (water years 1907-11, 1920-31, 1944-77), 1,433 ft³/s (40.58 m³/s) 66.64 in/yr (1,693 mm/yr), 1,038,000 acre-ft/yr (1,280 hm³/yr), adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s (767 m³/s) Dec. 4, 1975, gage height, 11.90 ft (3.627 m); practically no flow on many occasions at site "near La Grande" (which excluded diversion) as a result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,380 ft³/s (67.4 m³/s) Oct. 19, gage height, 4.56 ft (1.390 m); minimum, 110 ft³/s (3.12 m³/s) Aug. 12, gage height, 2.30 ft (0.701 m); minimum daily discharge, 391 ft³/s (11.1 m³/s) May 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	880	940	940	940	540	610	1320	840	440	870	1070	1250
2	880	930	940	540	544	650	1430	810	480	880	1160	1280
3	880	940	940	580	576	650	1320	762	800	880	1070	1280
4	1130	930	940	540	544	650	1320	771	1390	880	1070	1280
5	1320	940	940	540	544	650	1280	830	1210	820	1070	1290
6	1650	930	940	940	544	650	1320	850	1330	645	1070	1530
7	2090	940	920	690	544	690	1190	840	1810	512	1070	1860
8	2240	940	860	580	544	760	1100	840	2270	433	1070	1840
9	2200	940	860	720	544	830	1100	699	2360	433	1070	1840
10	2200	940	830	760	552	940	1100	480	1920	423	1020	1840
11	2200	940	840	540	544	1320	1100	456	1750	426	990	1860
12	2240	940	840	540	544	1240	1100	426	1750	405	951	1830
13	2240	940	830	540	560	1080	1110	412	1560	405	890	1860
14	2280	940	830	540	560	1430	1100	405	1290	405	880	1860
15	2240	940	830	540	540	1500	1100	405	1140	405	880	1840
16	2020	940	700	540	540	1570	1180	412	1000	398	890	1860
17	1570	940	690	540	540	1380	1110	405	950	405	880	1860
18	2240	940	610	540	560	1320	1110	412	940	404	890	1860
19	2260	940	610	540	560	1350	1110	391	940	516	880	1860
20	2100	940	610	540	560	1430	1110	405	950	576	604	1860
21	1910	940	610	560	540	1390	1120	419	950	584	520	1860
22	1700	940	580	560	540	1320	1110	419	950	584	600	1860
23	1500	940	560	580	540	1390	1110	419	950	584	725	1860
24	1670	940	560	760	540	1460	1110	412	940	581	725	1860
25	2020	940	560	690	560	1390	1110	419	940	636	763	1860
26	1830	940	560	690	560	1460	1110	419	940	744	810	1840
27	1050	940	560	650	560	1540	1110	419	940	830	860	1840
28	960	940	560	720	560	1460	1110	419	940	990	860	1820
29	930	940	560	580	---	1320	1010	426	940	1070	840	1800
30	920	940	560	540	---	1390	850	426	890	1070	780	1800
31	940	---	560	540	---	1460	---	419	---	1080	1140	---
TOTAL	52100	28170	22600	18810	15204	36270	34280	16475	35610	19967	28173	52360
MEAN	1681	939	729	607	543	1170	1143	531	1187	644	909	1745
MAX	2280	940	940	940	576	1570	1430	850	2360	1080	1160	1860
MIN	880	930	560	540	540	610	850	391	440	398	520	1250
AC-FT	103300	55880	44830	37310	30160	71940	67990	32680	70630	39600	55880	103900
†	-70,069	-17,111	-8,476	+2,307	+3,336	+6,101	+28,952	+49,209	+13,816	+2,936	+702	-46,357
MEAN‡	540	651	591	646	603	1,269	1,630	1,332	1,420	692	920	967
CFSM‡	1.85	2.23	2.02	2.21	2.07	4.35	5.58	4.56	4.86	2.37	3.15	3.31
IN.‡	2.13	2.49	2.33	2.55	2.15	5.01	6.22	5.26	5.42	2.73	3.63	3.69
AC-FT‡	33,230	38,750	36,330	39,710	33,500	78,040	96,940	81,890	84,450	42,540	56,580	57,540

CAL YR 1976: TOTAL 546,672 MEAN 1,494 MAX 12,400 MIN 540 AC-FT 1,084,000
DO.....: MEAN‡ 1,372 CFSM‡ 4.70 IN‡ 63.95 AC-FT‡ 996,000
WTR YR 1977: TOTAL 360,019 MEAN 986 MAX 2,300 MIN 391 AC-FT 714,100
DO.....: MEAN‡ 939 CFSM‡ 3.22 IN‡ 43.63 AC-FT‡ 679,500

† Change in contents, in acre-feet, in Alder and La Grande Reservoirs.
‡ Adjusted for change in reservoir contents.

NISQUALLY RIVER BASIN

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1965 to current year.

INSTRUMENTATION.--Temperature recorder since 1965.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 14.5°C Sept. 21-24, 26, 27, 1975; minimum, 2.0°C Jan. 19-21, 1972, Jan. 23, 24, 27-31, 1973, Dec. 21, 22, 30, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 14.0°C Sept. 18-25; minimum, 4.0°C Jan. 24-28.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
15...	1105	850	61	7.6	7.4	0	12.0	B57	.03	.02
APR										
13...	1005	1160	56	7.6	5.5	3	13.4	80	.10	.01
JUN										
15...	1110	1120	51	6.9	7.0	1	11.7	140	.08	.00
SEP										
14...	1140	1080	49	6.8	13.5	70	9.6	B700	.02	.12

B Results based upon colony counts outside the ideal range.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	13.0	13.0	11.5	11.0	11.0	8.5	8.0	8.5	6.0	5.5	5.5
2	13.0	12.5	13.0	11.0	11.0	11.0	8.0	8.0	8.0	5.5	5.5	5.5
3	12.5	12.5	12.5	11.0	11.0	11.0	8.0	7.5	7.5	5.5	5.5	5.5
4	13.0	12.5	12.5	11.0	11.0	11.0	7.5	7.5	7.5	5.5	5.5	5.5
5	13.0	12.5	13.0	11.0	11.0	11.0	7.5	7.5	7.5	5.5	5.5	5.5
6	13.0	13.0	13.0	11.0	10.5	11.0	7.5	7.5	7.5	5.5	5.0	5.0
7	13.0	13.0	13.0	11.0	10.5	10.5	7.5	7.5	7.5	5.0	5.0	5.0
8	13.0	13.0	13.0	11.0	10.5	11.0	7.5	7.5	7.5	5.0	4.5	5.0
9	13.0	13.0	13.0	11.0	10.5	10.5	7.5	7.0	7.5	4.5	4.5	4.5
10	13.0	13.0	13.0	10.5	10.5	10.5	7.0	7.0	7.0	4.5	4.5	4.5
11	13.0	13.0	13.0	10.5	10.5	10.5	7.0	7.0	7.0	5.0	4.5	4.5
12	13.0	13.0	13.0	10.5	10.5	10.5	7.0	7.0	7.0	5.0	5.0	5.0
13	13.0	13.0	13.0	10.5	10.5	10.5	7.0	7.0	7.0	5.0	4.5	5.0
14	13.0	13.0	13.0	10.5	10.5	10.5	7.0	7.0	7.0	5.0	4.5	5.0
15	13.0	13.0	13.0	10.5	10.5	10.5	7.5	7.0	7.5	5.0	5.0	5.0
16	13.0	13.0	13.0	10.5	10.0	10.5	7.5	7.0	7.0	5.0	4.5	5.0
17	13.0	13.0	13.0	10.5	10.0	10.5	7.0	7.0	7.0	5.0	5.0	5.0
18	13.0	13.0	13.0	10.0	10.0	10.0	7.0	6.5	7.0	5.0	4.5	5.0
19	13.0	13.0	13.0	10.0	10.0	10.0	6.5	6.5	6.5	5.0	4.5	4.5
20	13.0	13.0	13.0	10.0	10.0	10.0	6.5	6.5	6.5	4.5	4.5	4.5
21	13.0	12.5	13.0	10.0	9.5	10.0	6.5	6.5	6.5	4.5	4.5	4.5
22	12.5	12.5	12.5	9.5	9.5	9.5	6.5	6.5	6.5	4.5	4.5	4.5
23	12.5	12.5	12.5	9.5	9.0	9.5	6.5	6.5	6.5	4.5	4.5	4.5
24	12.5	12.0	12.0	9.0	9.0	9.0	6.5	6.5	6.5	4.5	4.0	4.5
25	12.0	12.0	12.0	9.0	9.0	9.0	6.5	6.5	6.5	4.5	4.0	4.5
26	12.0	12.0	12.0	9.0	9.0	9.0	6.5	6.5	6.5	4.5	4.0	4.5
27	12.0	12.0	12.0	9.0	8.5	9.0	6.5	6.5	6.5	4.5	4.0	4.5
28	12.0	11.5	11.5	8.5	8.0	8.5	6.5	6.5	6.5	4.5	4.0	4.5
29	11.5	11.5	11.5	8.5	8.0	8.5	6.5	6.0	6.0	4.5	4.5	4.5
30	11.5	11.5	11.5	8.5	8.0	8.5	6.0	6.0	6.0	4.5	4.5	4.5
31	11.5	11.5	11.5	---	---	---	6.0	6.0	6.0	4.5	4.5	4.5
MONTH	13.0	11.5	12.5	11.5	8.0	10.0	8.5	6.0	7.0	6.0	4.0	5.0

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.0	4.5	4.5	5.0	4.5	5.0	5.0	5.0	5.0	---	---	---
2	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.0	---	---	---
3	4.5	4.5	4.5	5.0	4.5	5.0	5.5	5.0	5.5	6.0	6.0	6.0
4	4.5	4.5	4.5	5.0	4.5	5.0	5.5	5.0	5.5	6.0	6.0	6.0
5	4.5	4.5	4.5	5.0	4.5	5.0	6.0	5.5	6.0	6.0	5.5	6.0
6	5.0	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
7	4.5	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.0
8	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.5
9	5.0	4.5	5.0	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.5
10	5.0	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.5
11	5.0	4.5	5.0	5.5	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.0
12	5.0	5.0	5.0	5.5	5.0	5.5	5.5	5.5	5.5	6.5	6.0	6.5
13	5.0	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5	7.0	6.0	6.5
14	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.5
15	5.0	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5	7.0	6.5	6.5
16	5.0	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5	6.5	6.5	6.5
17	5.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.5	6.5
18	4.5	4.5	4.5	5.0	5.0	5.0	---	---	---	6.5	6.0	6.5
19	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	7.5	6.5	6.5
20	5.0	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5
21	5.0	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.5	7.0
22	5.0	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.5	6.5
23	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	6.0	7.0	6.5	7.0
24	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	6.0	7.0	6.5	7.0
25	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	7.5	6.5	7.0
26	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.5	7.0
27	5.0	4.5	5.0	5.0	5.0	5.0	6.0	5.5	6.0	7.5	6.5	7.0
28	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	7.0	6.5	7.0
29	---	---	---	5.0	5.0	5.0	6.0	6.0	6.0	7.5	6.5	7.0
30	---	---	---	5.0	5.0	5.0	6.5	6.0	6.0	7.5	6.5	7.0
31	---	---	---	5.0	5.0	5.0	---	---	---	7.5	7.0	7.0
MONTH	5.0	4.5	4.5	5.5	4.5	5.0	6.5	5.0	5.5	7.5	5.5	6.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.5	7.0	7.0	9.5	9.0	9.0	10.0	9.5	10.0	11.5	11.0	11.5
2	7.5	7.0	7.5	9.5	9.0	9.0	10.0	9.5	9.5	11.5	11.5	11.5
3	7.5	7.0	7.5	9.0	9.0	9.0	10.0	9.5	10.0	12.0	11.5	11.5
4	7.5	7.0	7.0	9.0	9.0	9.0	10.0	9.5	10.0	12.0	11.5	12.0
5	7.5	7.0	7.0	9.0	9.0	9.0	10.0	10.0	10.0	12.0	12.0	12.0
6	8.0	7.5	7.5	9.5	9.0	9.0	10.0	10.0	10.0	12.0	12.0	12.0
7	7.5	7.0	7.5	10.0	9.0	9.5	10.0	10.0	10.0	12.5	12.0	12.0
8	7.5	7.5	7.5	9.5	9.0	9.5	10.0	10.0	10.0	12.5	12.0	12.5
9	8.0	7.5	7.5	9.5	9.5	9.5	10.0	10.0	10.0	13.0	12.5	12.5
10	8.0	7.5	8.0	9.5	9.0	9.5	10.5	10.0	10.0	13.0	12.5	13.0
11	8.0	7.5	8.0	10.0	9.5	9.5	10.5	10.0	10.0	13.5	13.0	13.0
12	8.0	8.0	8.0	10.0	9.5	9.5	10.5	10.0	10.5	13.5	13.0	13.0
13	8.5	8.0	8.0	10.0	9.5	9.5	10.5	10.0	10.5	13.5	13.0	13.5
14	8.5	8.0	8.0	10.5	9.5	9.5	10.5	10.0	10.0	13.5	13.5	13.5
15	8.5	8.0	8.0	10.5	9.5	10.0	10.5	10.5	10.5	13.5	13.5	13.5
16	8.5	8.0	8.5	10.5	9.5	10.0	11.0	10.5	10.5	13.5	13.5	13.5
17	9.0	8.5	9.0	10.0	9.5	9.5	10.5	10.5	10.5	13.5	13.5	13.5
18	9.0	8.5	8.5	10.0	9.5	9.5	10.5	10.5	10.5	14.0	13.5	13.5
19	9.0	8.5	8.5	10.5	9.5	9.5	10.5	10.5	10.5	14.0	13.5	14.0
20	9.0	8.5	8.5	9.5	9.5	9.5	11.0	10.5	10.5	14.0	14.0	14.0
21	9.0	8.5	9.0	10.0	9.5	9.5	11.0	10.5	10.5	14.0	14.0	14.0
22	9.0	8.5	9.0	10.0	9.5	9.5	11.0	10.5	10.5	14.0	14.0	14.0
23	9.0	9.0	9.0	10.0	9.5	10.0	11.0	10.5	10.5	14.0	14.0	14.0
24	9.0	9.0	9.0	10.0	9.5	10.0	10.5	10.5	10.5	14.0	13.5	14.0
25	9.5	9.0	9.0	10.0	9.5	10.0	11.0	10.5	10.5	14.0	13.5	13.5
26	9.0	9.0	9.0	10.0	9.5	10.0	11.0	10.5	10.5	13.5	13.5	13.5
27	9.0	9.0	9.0	10.0	9.5	9.5	11.0	11.0	11.0	13.5	13.5	13.5
28	9.0	9.0	9.0	10.0	9.5	9.5	11.0	11.0	11.0	13.5	13.0	13.5
29	9.0	9.0	9.0	9.5	9.5	9.5	11.0	11.0	11.0	13.0	13.0	13.0
30	9.0	9.0	9.0	10.0	9.5	9.5	11.5	11.0	11.0	13.0	13.0	13.0
31	---	---	---	10.0	9.5	9.5	11.5	11.0	11.0	---	---	---
MONTH	9.5	7.0	8.0	10.5	9.0	9.5	11.5	9.5	10.5	14.0	11.0	13.0
YEAR	14.0	4.0	8.0									

12088400 NISQUALLY RIVER ABOVE POWELL CREEK, NEAR MCKENNA, WA

LOCATION.--Lat 46°51'03", long 122°26'06", in SE¼SW¼ sec.21, T.16 N., R.3 E., Thurston County, Hydrologic Unit 17110015, on left bank 400 ft (122 m) downstream from logging bridge, 1.8 mi (2.9 km) upstream from Tanwax Creek, 10 mi (16 km) southeast of Yelm, and at mile 32.6 (52.5 km).

DRAINAGE AREA.--431 mi^2 (1,116 km^2). Area at site used 1941-63, 445 mi^2 (1,153 km^2).

PERIOD OF RECORD.--August 1941 to July 1963 (published as Nisqually River near McKenna), March 1969 to current year. Chemical analyses October 1972 to September 1973.

REVISED RECORDS.--WSP 1286: 1947.

GAGE.--Water-stage recorder. Datum of gage is 388.94 ft (118.549 m), above mean sea level. Prior to July 3, 1963, at site 1 mi (1.6 km) downstream at different datum.

REMARKS.--Records good. No diversion above station. Major portion of flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta 12085000) since November 1944, and by La Grande Reservoir (see sta 12085500) since February 1945.

AVERAGE DISCHARGE.--29 years (water years 1942-62, 1970-77), 1,841 ft^3/s (52.14 m^3/s), 1,334,000 acre-ft/yr (1,640 hm^3/yr) unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,700 ft^3/s (869 m^3/s) Dec. 4, 1975, gage height, 11.97 ft (3.648 m) from rating curve extended above 20,000 ft^3/s (566 m^3/s); minimum, 85 ft^3/s (2.41 m^3/s) Oct. 19, 1945, gage height, 2.57 ft (0.783 m), site and datum then in use; minimum daily, 176 ft^3/s (4.98 m^3/s) Jan. 30, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,590 ft^3/s (73.3 m^3/s) Mar. 9, gage height, 4.47 ft (1.362 m); minimum, 564 ft^3/s (16.0 m^3/s) July 16, 17, 18, gage height, 2.69 ft (0.820 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	900	1100	959	741	700	946	1650	1020	1330	888	1050	1320
2	884	1060	956	730	692	1020	1690	1030	1290	879	1060	1330
3	881	1040	952	745	708	1250	1550	1150	1340	879	1050	1330
4	1010	1010	947	716	683	1130	1540	1350	1870	888	1050	1350
5	1180	1000	947	702	682	999	1610	1280	1640	862	1050	1390
6	1480	987	946	931	677	963	1750	1210	1630	758	1040	1500
7	1990	980	961	822	676	1130	1720	1140	1980	689	1040	1870
8	2150	977	916	695	676	1740	1700	1260	2420	633	1030	1870
9	2130	972	1010	755	677	2250	1550	1090	2400	619	1030	1870
10	2150	968	945	843	720	1750	1440	864	2070	612	996	1860
11	2150	964	926	710	770	1540	1380	878	1800	605	951	1860
12	2160	955	915	714	940	1780	1330	804	1820	584	933	1850
13	2200	954	902	720	860	1810	1380	756	1620	584	862	1860
14	2210	952	898	716	760	1780	1360	764	1350	577	854	1860
15	2180	953	892	714	720	1780	1330	818	1220	577	862	1850
16	2070	999	864	742	710	1670	1440	846	1100	570	854	1830
17	1500	1030	797	790	703	1570	1410	950	1020	570	854	1860
18	2170	1090	740	808	699	1490	1350	956	1000	605	854	1860
19	2180	1040	735	835	691	1520	1310	852	996	640	854	1850
20	2080	1020	725	790	687	1540	1280	796	987	668	782	1890
21	1860	1010	725	740	697	1540	1270	783	987	675	647	1990
22	1670	996	709	700	726	1480	1290	757	987	668	668	1940
23	1550	987	732	760	749	1620	1330	763	978	668	782	1970
24	1370	980	725	1000	718	1750	1340	857	969	668	915	2100
25	2060	976	719	920	710	1630	1360	834	960	689	862	2100
26	2000	969	945	900	716	1660	1370	975	951	750	933	2100
27	1220	964	1060	1050	719	2270	1300	913	960	814	969	2000
28	1020	960	915	940	798	1920	1270	891	960	942	924	1970
29	1010	956	830	800	---	1630	1190	919	960	1040	942	1990
30	987	961	790	720	---	1590	1030	850	915	1050	1180	2080
31	997	---	762	700	---	1630	---	936	---	1050	1250	---
TOTAL	51399	29810	26845	24449	20264	48378	42520	29292	40510	22701	29128	54500
MEAN	1658	994	866	789	724	1561	1417	945	1350	732	940	1817
MAX	2210	1100	1060	1050	940	2270	1750	1350	2420	1050	1250	2100
MIN	881	952	709	695	676	946	1030	756	915	570	647	1320
AC-FT	101900	59130	53250	48490	40190	95960	84340	58100	80350	45030	57780	108100

CAL YR 1976 TOTAL 621652 MEAN 1699 MAX 15700 MIN 709 AC-FT 1233000
WTR YR 1977 TOTAL 419796 MEAN 1150 MAX 2420 MIN 570 AC-FT 832700

12089500 NISQUALLY RIVER AT MCKENNA, WA

LOCATION.--Lat 46°56'01", long 122°33'35", in SE¼NW¼ sec.28, T.17 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank at downstream side of State Highway 507 bridge at McKenna, and at mile 21.8 (35.1 km).

DRAINAGE AREA.--517 mi² (1,339 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1947 to September 1968, May to September 1977.

GAGE.--Water-stage recorder. Datum of gage is 285.47 ft (87.011 m) above mean sea level. Prior to Sept. 30, 1968, water-stage recorder at site 100 ft (30.5 m) downstream at present datum.

REMARKS.--Water-discharge records excellent. Flow regulated by Alder Reservoir (see sta 12085000) at mile 44.2 (71.1 km) and La Grande Reservoir (see sta 12085500) at mile 42.5 (68.4 km). Centralia power canal diverts water 4.4 mi (7.1 km) upstream from station, which is returned to river at powerplant 9.2 mi (14.8 km) downstream from station. Minor diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s (728 m³/s) Jan. 29, 1965, gage height, 13.00 ft (3.962 km); minimum, 20 ft³/s (0.57 m³/s) Sept. 10, 11, 1965, Aug. 31, 1966; minimum gage height, 0.75 ft (0.229 m) Aug. 13, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period May to September, 1,620 ft³/s (45.9 m³/s) June 9, gage height, 3.57 ft (1.088 m); minimum, 39 ft³/s (1.10 m³/s) Aug. 20, 21, 22, 23, gage height, 0.76 ft (0.232 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								---	713	450	640	879
2								---	592	450	634	886
3								---	541	455	628	879
4								---	998	460	634	893
5								---	963	440	628	928
6								---	837	440	628	991
7								---	1030	445	628	1420
8								---	1570	450	628	1410
9								---	1570	450	622	1400
10								---	1340	445	604	1400
11								---	949	435	547	1390
12								---	1020	435	536	1390
13								---	858	430	445	1400
14								---	580	425	470	1400
15								---	503	430	475	1390
16								---	450	440	455	1210
17								---	435	420	450	998
18								---	460	445	445	998
19								---	455	486	435	998
20								---	445	450	287	1030
21								---	445	460	39	1110
22								---	440	460	39	1080
23								---	430	460	48	1100
24								497	440	450	120	1220
25								460	440	460	96	1220
26								470	435	481	128	1280
27								460	430	470	193	1160
28								497	425	514	137	1140
29								503	425	622	149	1160
30								450	435	640	363	1240
31								503	---	640	593	---
TOTAL								---	20654	14538	12724	35000
MEAN								---	688	469	410	1167
MAX								---	1570	640	640	1420
MIN								---	425	420	39	879
AC-FT								---	40970	28840	25240	69420

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
15...	1150	--	69	7.8	8.3	6	13.1	230	.03	.03
APR										
13...	1125	--	56	7.6	8.0	2	13.2	B182	.17	.02
JUN										
15...	1200	465	58	7.2	10.0	1	12.0	>20000	.05	.00
SEP										
14...	1205	1420	52	7.0	13.7	50	9.9	2300	.04	.11

B Results based upon colony counts outside the ideal range.
NOTE.--No discharges available Dec. 15 to Apr. 13.

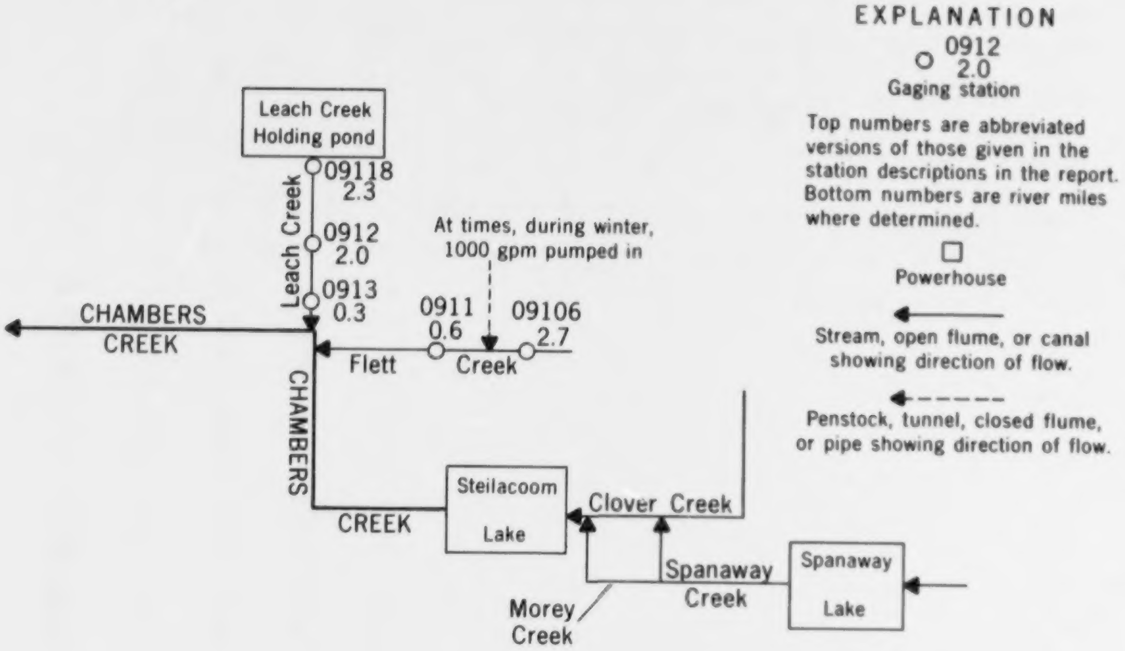
EXPLANATION
0912
2.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Leach Creek Holding pond
09118
2.3
Leach Creek
0912
2.0
0913
0.3
At times, during winter, 1000 gpm pumped in
CHAMBERS CREEK
0911
0.6
09106
2.7
Flett
Creek
CHAMBERS
CREEK
Steilacoom Lake
Clover Creek
Spanaway Creek
Spanaway Lake
Morey Creek

Figure 10. Gaging stations in Chambers Creek basin.

12091060 FLETT CREEK AT MOUNTAIN VIEW MEMORIAL PARK, AT TACOMA, WA

LOCATION.--Lat 47°11'06", long 122°29'17", in NW¼NE¼ sec.36, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 0.4 mi (0.6 km) downstream from 74th Street crossing in Tacoma and 2.7 mi (4.3 km) upstream from mouth.

DRAINAGE AREA.--5.91 mi² (15.31 km²), excludes 0.68 mi² (1.76 km²) storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder and metal V-notch control. Altitude of gage is 235 ft (71.6 m), from topographic map.

REMARKS.--Records fair. No regulation. Storm sewer drainage above station. Several diversions for irrigation and industrial use above station.

AVERAGE DISCHARGE.--10 years, 4.26 ft³/s (0.121 m³/s), 3,090 acre-ft/yr (3.81 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103 ft³/s (2.92 m³/s) Mar. 5, 1972, gage height, 3.53 ft (1.076 m); maximum gage height, 3.73 ft (1.137 m) Jan. 18, 1972, backwater from road construction; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27 ft³/s (0.76 m³/s) Mar. 9, gage height, 2.42 ft (0.738 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.79	.00	.05	.00	4.0	.88	.00	7.8	.00	.00	.00
2	.00	.70	.00	.01	.00	8.7	.34	.00	6.6	.00	.00	.00
3	.00	.20	.00	.00	.00	14	.18	.00	5.5	.00	.00	.00
4	.00	.01	.00	.00	.00	11	.06	.00	5.8	.00	.00	.00
5	.00	.00	.00	.00	.00	7.0	.01	.00	4.0	.00	.00	.00
6	.00	.00	.00	.00	.00	4.2	.00	.00	3.0	.00	.00	.00
7	.00	.00	.00	.00	.00	4.5	.00	.00	1.5	.00	.00	.00
8	.00	.00	.00	.00	.00	10	.00	.00	.55	.00	.00	.00
9	.00	.00	.00	.00	.00	18	.00	.00	.11	.00	.00	.00
10	.00	.00	.00	.00	.00	20	.00	.00	.01	.00	.00	.00
11	.00	.00	.00	.00	.00	14	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	10	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	7.8	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	7.0	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	5.8	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.11	.00	4.8	.00	.00	.00	.00	.00	.00
17	.00	.05	.00	.20	.00	3.3	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	1.1	.00	1.3	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.88	.00	.44	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.62	.00	.15	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.12	.00	.03	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.01	.00	.03	.00	.00	.00	.00	.00	.00
23	.00	.00	.16	.00	.00	.30	.00	.00	.00	.00	.00	.00
24	.00	.00	.16	.00	.00	.04	.00	.00	.00	.00	.00	.00
25	.00	.00	2.8	.00	.00	.05	.00	.00	.00	.00	.00	.63
26	.00	.00	7.8	.00	.00	.98	.00	.00	.00	.00	.00	.44
27	.00	.00	9.2	.00	.00	1.7	.00	.00	.00	.00	.00	.02
28	.00	.00	6.2	.00	1.9	1.9	.00	.01	.00	.00	.00	1.3
29	.00	.00	2.8	.00	---	1.7	.00	.03	.00	.00	.00	1.6
30	.00	.00	1.1	.00	---	2.1	.00	.01	.00	.00	.00	.39
31	.92	---	.26	.00	---	1.5	---	5.8	---	.00	.00	---
TOTAL	.92	1.75	30.48	3.10	1.90	166.32	1.47	5.85	34.87	.00	.00	4.38
MEAN	.030	.058	.98	.10	.068	5.37	.049	.19	1.16	.000	.000	.15
MAX	.92	.79	9.2	1.1	1.9	20	.88	5.8	7.8	.00	.00	1.6
MIN	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
CFSM	.005	.01	.17	.02	.01	.91	.008	.03	.20	.000	.000	.03
IN.	.01	.01	.19	.02	.01	1.05	.01	.04	.22	.00	.00	.03
AC-FT	1.8	3.5	60	6.1	3.8	330	2.9	12	69	.00	.00	8.7

CAL YR 1976 TOTAL 975.09 MEAN 2.66 MAX 34 MIN .00 CFSM .45 IN 6.14 AC-FT 1930
WTR YR 1977 TOTAL 251.04 MEAN .69 MAX 20 MIN .00 CFSM .12 IN 1.58 AC-FT 498

12091100 FLETT CREEK AT TACOMA, WA

LOCATION.--Lat 47°11'23", long 122°31'08", in NE¼SW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at 75th Street, 0.6 mi (1.0 km) upstream from mouth and 0.7 mi (1.1 km) west of city limits of Tacoma.

DRAINAGE AREA.--7.33 mi² (18.98 km²) excludes 0.68 mi² (1.76 km²) storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--June 1959 to current year. Chemical analyses October 1964 to September 1965.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 200 ft (61 m), from topographic map.

REMARKS.--Records fair. Storm sewer drainage above station. Several diversions for irrigation and industrial use. At times, during winter months, 1,000 gpm (0.063 m³/s) is pumped into creek for short intervals from Mountain View Memorial Park.

AVERAGE DISCHARGE.--18 years, 8.53 ft³/s (0.242 m³/s), 6,180 acre-ft/yr (7.62 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132 ft³/s (3.74 m³/s) Mar. 5, 1972, gage height, 2.97 ft (0.905 m), from rating curve extended above 45 ft³/s (1.27 m³/s) on basis of computation of peak flow over weir at gage height 2.82 ft (0.860 m); minimum, 0.29 ft³/s (0.008 m³/s) Aug. 27, 1967; minimum gage height, 1.30 ft (0.396 m) Aug. 18, 19, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38 ft³/s (1.08 m³/s) Mar. 9, gage height, 2.53 ft (0.771 m); minimum discharge, 0.41 ft³/s (0.012 m³/s) Aug. 18, 19, gage height, 1.30 ft (0.396 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	3.1	1.8	2.5	1.4	8.6	5.8	2.0	12	1.2	.54	.76
2	2.5	2.5	1.8	2.5	1.4	13	4.3	2.3	12	1.1	.54	1.0
3	2.6	2.2	1.8	2.2	1.3	18	4.0	3.4	11	1.4	.54	1.0
4	2.3	2.1	1.7	2.0	1.3	16	4.0	2.5	12	1.7	.54	1.3
5	2.3	2.1	1.6	1.9	1.3	12	4.0	2.3	8.9	1.5	.54	.76
6	2.2	2.1	1.6	1.9	1.3	8.6	4.0	2.3	7.8	1.3	.54	.70
7	2.0	2.0	1.6	1.8	1.2	9.2	3.8	2.2	6.5	1.1	.54	.70
8	1.9	2.0	2.0	1.8	1.2	18	3.7	2.0	4.9	.95	.54	.70
9	1.9	2.0	1.7	1.7	1.2	30	2.9	2.2	3.8	.88	.54	.76
10	1.9	2.0	1.6	1.7	1.9	32	2.6	2.3	3.3	.95	.54	.82
11	1.9	2.0	1.6	2.2	1.7	26	2.6	2.0	3.0	1.1	.49	.82
12	1.9	2.0	1.5	2.2	1.7	20	2.9	1.8	2.9	.88	.49	.76
13	1.8	2.0	1.6	2.0	1.5	16	3.0	1.8	2.7	.82	.49	.76
14	1.8	2.0	1.6	2.2	1.4	14	2.5	1.9	2.6	.82	.49	.76
15	1.8	2.1	1.7	2.6	1.4	12	2.7	2.0	2.1	.76	.54	.76
16	1.8	2.2	1.6	2.6	1.4	11	2.9	2.9	1.9	.70	.49	.76
17	1.8	2.5	1.8	2.7	1.4	8.9	2.6	2.3	1.8	.70	.49	.82
18	1.8	2.2	1.7	3.3	1.3	6.0	2.5	2.2	1.8	.82	.45	.88
19	1.8	2.1	1.6	2.9	1.3	4.7	2.5	2.0	1.8	.76	.70	1.8
20	1.8	1.8	1.6	2.2	1.6	4.0	2.5	1.9	1.8	.70	.64	1.5
21	1.8	2.0	1.6	1.7	2.0	3.8	2.6	1.9	1.7	.64	.59	1.1
22	1.9	1.9	3.0	1.3	2.6	4.2	2.5	1.9	1.7	.59	.54	.88
23	1.9	1.9	4.3	1.2	1.8	4.7	2.3	1.9	1.7	.59	2.6	2.2
24	2.2	1.9	3.7	1.2	1.7	4.3	2.3	1.8	1.6	.64	2.1	1.9
25	2.1	1.9	5.1	1.2	1.8	4.0	2.5	1.9	1.6	.59	2.3	2.2
26	1.9	1.8	9.2	1.3	1.7	4.7	2.5	2.7	1.8	.59	.95	2.2
27	1.8	1.8	12	1.4	1.8	6.0	2.2	2.3	1.7	.59	.76	2.1
28	2.7	1.8	11	1.4	5.8	5.4	2.2	2.3	1.5	.59	.76	2.9
29	2.3	1.8	6.7	1.3	---	4.7	2.0	2.2	1.5	.59	1.8	4.2
30	2.2	1.8	4.2	1.3	---	4.9	2.0	2.5	1.3	.59	1.5	3.3
31	3.2	---	3.0	1.5	---	5.2	---	8.3	---	.59	.82	---
TOTAL	64.5	61.6	97.3	59.7	47.4	339.9	88.9	74.0	120.7	26.73	25.39	41.10
MEAN	2.08	2.05	3.14	1.93	1.69	11.0	2.96	2.39	4.02	.86	.82	1.37
MAX	3.2	3.1	12	3.3	5.8	32	5.8	8.3	12	1.7	2.6	4.2
MIN	1.8	1.8	1.5	1.2	1.2	3.8	2.0	1.8	1.3	.59	.45	.70
AC-FT	128	122	193	118	94	674	176	147	239	53	50	82

CAL YR 1976 TOTAL 2943.60 MEAN 8.04 MAX 55 MIN 1.2 AC-FT 5840
WTR YR 1977 TOTAL 1047.22 MEAN 2.87 MAX 32 MIN .45 AC-FT 2080

12091180 LEACH CREEK AT HOLDING POND, AT FIRCREST, WA

LOCATION.--Lat 47°13'29", long 122°30'32", in NE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at holding pond dam, 0.8 mi (1.3 km) south of Fircrest, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--4.59 mi² (11.89 km²), includes 0.68 mi² (1.76 km²) storm drainage from Flett Creek basin.

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 200 ft (61 m) above mean sea level (levels by city of Tacoma).

REMARKS.--Records good except those for period of no gage-height record Aug. 26 to Sept. 30, which are fair. Drainage into upper end of basin influenced by urbanizing of area. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No known diversion above station.

AVERAGE DISCHARGE.--10 years, 3.84 ft³/s (0.109 m³/s), 2,780 acre-ft/yr (3.43 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 114 ft³/s (3.23 m³/s) Mar. 5, 1972, gage height, 11.95 ft (3.642 m), from rating curve extended above 45 ft³/s (1.27 m³/s); minimum, 0.34 ft³/s (0.010 m³/s) Mar. 1, 2, 1969, gage height, 7.63 ft (2.326 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36 ft³/s (1.02 m³/s) Aug. 23, gage height, 9.72 ft (2.963 m); minimum daily, 1.3 ft³/s (0.037 m³/s) July 31, Aug. 1, 6, 7, 8, 13, 14.

REVISIONS.--The maximum discharge for water year 1975 has been revised to 60 ft³/s (1.70 m³/s) Feb. 19, 1975, gage height, 10.97 ft (3.344 m), superseding figure published in the report for 1975.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.2	2.1	1.7	2.0	7.1	1.9	3.4	5.6	1.6	1.3	1.6
2	1.6	1.8	2.1	3.0	1.9	13	1.5	6.6	1.8	1.5	1.4	6.6
3	1.4	1.6	2.0	2.0	1.9	9.7	1.5	9.2	6.3	1.5	1.4	3.3
4	1.4	1.6	1.9	2.4	1.9	1.9	1.5	3.0	6.6	1.5	1.6	7.8
5	1.5	1.6	1.9	1.8	1.8	1.7	1.8	2.7	1.8	1.5	1.4	1.6
6	1.6	1.6	1.9	1.8	1.8	3.5	1.8	2.2	1.7	1.6	1.3	1.5
7	1.6	1.6	2.6	1.7	1.9	9.9	1.8	2.0	1.7	1.6	1.3	1.6
8	1.6	1.8	6.7	1.6	1.9	17	2.9	2.1	1.7	1.6	1.3	1.6
9	1.6	2.1	2.1	1.6	1.9	13	1.5	2.1	1.7	1.5	1.4	1.6
10	1.6	2.0	1.9	1.8	5.3	2.1	1.5	2.1	1.6	1.4	1.5	1.6
11	1.7	2.0	1.8	6.1	3.3	3.5	1.6	2.1	1.6	1.6	1.5	1.5
12	1.7	2.2	1.8	3.9	4.4	7.9	1.7	2.9	1.6	1.6	1.5	1.6
13	1.7	2.1	2.3	2.7	1.9	2.8	2.9	2.0	1.7	1.6	1.3	1.5
14	1.7	2.6	2.2	2.2	1.9	6.1	1.7	2.0	1.7	1.6	1.3	1.5
15	1.7	3.4	2.8	5.6	1.8	2.9	2.8	2.1	1.7	1.6	1.5	1.5
16	1.7	5.2	1.9	5.6	2.0	1.9	1.6	8.9	1.7	1.5	1.7	1.6
17	1.6	12	5.3	7.9	2.3	1.9	1.5	2.7	1.7	1.4	1.6	1.8
18	1.6	2.2	2.0	6.6	2.0	1.8	1.6	2.0	1.6	1.5	1.6	3.0
19	1.6	4.3	1.7	2.1	1.9	1.8	1.7	2.0	1.6	1.7	1.6	9.6
20	1.6	2.0	1.9	1.9	3.4	1.7	1.7	2.0	1.7	1.6	1.4	6.4
21	1.6	4.7	1.9	2.1	4.3	2.7	3.0	2.0	1.7	1.6	1.6	2.1
22	1.6	2.0	6.4	1.8	4.7	4.6	2.6	1.9	1.7	1.6	1.4	1.6
23	1.6	1.9	8.9	1.8	1.8	7.0	2.0	2.8	1.7	1.4	14	13
24	6.0	2.3	1.8	1.8	1.8	2.3	2.0	2.1	1.6	1.4	15	5.8
25	2.2	2.2	11	1.9	4.5	2.0	4.0	4.4	1.5	1.5	17	6.8
26	1.6	2.0	17	2.0	1.8	4.9	3.3	12	1.5	1.6	4.0	1.7
27	1.6	2.0	2.6	1.9	3.3	1.9	2.2	6.3	1.5	1.6	1.6	1.7
28	12	1.9	1.9	1.9	16	1.6	2.3	4.2	1.6	1.6	2.4	9.4
29	1.7	1.9	1.9	1.8	---	1.6	2.1	2.0	1.6	1.7	8.0	5.6
30	1.5	2.0	1.7	1.8	---	1.5	2.0	2.7	1.6	1.6	7.6	1.9
31	16	---	1.7	3.8	---	2.9	---	26	---	1.3	1.7	---
TOTAL	79.5	78.8	105.7	86.5	85.4	144.2	62.0	130.5	63.1	47.9	103.2	108.4
MEAN	2.56	2.63	3.41	2.79	3.05	4.65	2.07	4.21	2.10	1.55	3.33	3.61
MAX	16	12	17	7.9	16	17	4.0	26	6.6	1.7	17	13
MIN	1.4	1.6	1.7	1.6	1.8	1.5	1.5	1.9	1.5	1.3	1.3	1.5
AC-FT	158	156	210	172	169	286	123	259	125	95	205	215

CAL YR 1976 TOTAL 1205.2 MEAN 3.29 MAX 38 MIN 1.1 AC-FT 2390
WTR YR 1977 TOTAL 1095.2 MEAN 3.00 MAX 26 MIN 1.3 AC-FT 2170

12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 1.0 mi (1.6 km) south of Fircrest and 2 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--4.73 mi² (12.25 km²) includes 0.68 mi² (1.76 km²) storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 190 ft (58 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record Nov. 27 to Jan. 20, which are fair. Since Oct. 1, 1961, flow may be regulated at dam above station for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. Drainage into upper end of basin influenced by urbanizing of area. No know diversion above station.

AVERAGE DISCHARGE.--20 years, 4.04 ft³/s (0.114 m³/s), 2,930 acre-ft/yr (3.61 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 198 ft³/s (5.61 m³/s) Feb. 28, 1972, gage height, 3.51 ft (1.070 m), from rating curve extended above 60 ft³/s (1.70 m³/s); minimum, 0.1 ft³/s (0.003 m³/s) Sept. 22, 1965, gage height, 1.02 ft (0.311 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s (1.16 m³/s) Aug. 23, gage height, 1.83 ft (0.558 m); minimum daily, 1.3 ft³/s (0.037 m³/s) July 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	2.6	2.1	1.7	2.0	7.2	2.1	3.5	7.4	1.7	1.4	1.7
2	1.7	1.8	2.1	3.2	1.8	13	1.8	6.7	2.0	1.6	1.4	6.7
3	1.5	1.6	2.0	2.0	1.8	11	1.7	9.4	6.7	1.5	1.5	3.4
4	1.5	1.6	1.9	2.2	1.7	2.2	1.7	3.2	8.1	1.6	1.6	8.1
5	2.4	1.6	1.9	1.8	1.7	2.0	1.8	3.0	2.1	1.6	1.5	1.7
6	2.5	1.6	1.9	1.8	1.7	3.7	1.8	2.0	2.0	1.6	1.5	1.6
7	2.5	1.6	2.7	1.7	1.8	10	1.7	2.0	2.0	1.6	1.5	1.7
8	2.5	1.6	7.0	1.7	1.8	16	3.0	2.0	2.0	1.6	1.6	1.7
9	2.3	1.7	2.1	1.6	1.7	14	1.7	1.8	2.0	1.5	1.7	1.7
10	1.6	1.6	1.9	1.9	5.4	2.3	1.6	1.8	2.0	1.5	2.0	1.7
11	1.6	1.6	1.9	6.3	3.3	2.8	1.6	2.0	2.0	1.6	2.0	1.6
12	1.6	1.7	1.9	4.0	4.6	8.2	1.7	2.9	1.8	1.5	2.0	1.7
13	1.6	1.6	2.4	2.8	1.9	3.5	3.0	1.8	2.0	1.5	1.8	1.6
14	1.6	2.1	2.2	2.3	1.9	6.1	1.8	1.7	2.0	1.6	2.0	1.6
15	1.6	3.8	2.9	5.8	1.6	3.6	2.9	1.8	2.0	1.5	2.3	1.6
16	1.6	5.6	1.9	5.8	1.6	2.3	1.7	8.7	1.8	1.5	2.5	1.7
17	1.6	12	5.5	8.3	1.8	2.0	1.6	2.6	1.8	1.5	2.0	2.0
18	1.6	2.2	2.1	6.8	1.5	2.0	1.6	2.0	1.7	1.5	2.0	3.2
19	1.5	4.2	1.8	2.2	1.5	2.0	1.5	2.0	1.7	1.7	2.0	10
20	1.6	2.0	1.9	1.9	2.8	2.0	1.6	2.1	2.0	1.6	1.8	6.7
21	1.6	4.4	1.9	2.1	3.2	2.7	2.6	1.9	1.8	1.6	2.3	2.3
22	1.6	2.0	6.5	1.8	5.0	4.6	2.6	1.7	1.7	1.6	1.8	1.7
23	1.6	1.8	9.0	1.8	1.5	7.0	2.1	2.7	1.7	1.5	14	15
24	6.2	2.1	1.9	1.8	1.5	2.5	2.0	2.0	1.7	1.4	18	6.1
25	2.2	2.1	12	1.7	4.3	2.2	4.2	4.6	1.6	1.5	19	7.4
26	1.6	1.8	18	1.8	1.6	5.0	3.1	12	1.7	1.6	3.6	1.8
27	1.6	1.9	2.8	1.8	2.7	2.1	2.1	7.0	1.6	1.6	1.7	1.8
28	14	1.9	2.0	1.7	16	1.8	2.1	4.6	1.6	1.5	2.5	10
29	1.9	1.9	1.9	1.7	---	1.7	2.1	2.3	1.6	1.5	8.5	5.8
30	1.6	2.0	1.8	1.7	---	1.7	2.0	3.2	1.7	1.4	7.8	2.0
31	18	---	1.7	3.5	---	3.0	---	26	---	1.3	1.8	---
TOTAL	87.8	76.0	109.6	87.2	79.7	150.2	62.8	131.0	71.8	47.8	117.1	115.6
MEAN	2.83	2.53	3.54	2.81	2.85	4.85	2.09	4.23	2.39	1.54	3.78	3.85
MAX	18	12	18	8.3	16	16	4.2	26	8.1	1.7	19	15
MIN	1.5	1.6	1.7	1.6	1.5	1.7	1.5	1.7	1.6	1.3	1.4	1.6
CFSM	.60	.54	.75	.59	.60	1.03	.44	.89	.51	.33	.80	.81
IN.	.69	.60	.86	.69	.63	1.18	.49	1.03	.56	.38	.92	.91
AC-FT	174	151	217	173	158	298	125	260	142	95	232	229

CAL YR 1976 TOTAL 1252.7 MEAN 3.42 MAX 37 MIN 1.5 CFSM .72 IN 9.85 AC-FT 2480
WTR YR 1977 TOTAL 1136.6 MEAN 3.11 MAX 26 MIN 1.3 CFSM .66 IN 8.94 AC-FT 2250

12091500 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW¼NW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 0.3 mi (0.5 km) upstream from mouth and 4.1 mi (6.6 km) northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi² (16.99 km²), includes 0.68 mi² (1.76 km²), storm drainage from Flett Creek basin. Area used prior to July 1967, 5.88 mi² (15.23 km²).

PERIOD OF RECORD.--February 1957 to current year. Chemical analyses water years 1963-65, 1976.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 140 ft (43 m), from topographic map. Prior to June 27, 1973, water-stage recorder at site 150 ft (46 m) upstream at different datum. Supplementary water-stage recorder at site 50 ft (15 m) downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973 to Mar. 14, 1975, nonrecording gage at site 350 ft (107 m) upstream at different datum.

REMARKS.--Record good. Drainage into upper end of basin influenced by urbanizing of area. Some pumping for community use above gage. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin.

AVERAGE DISCHARGE.--20 years, 9.78 ft³/s (0.277 m³/s), 7,090 acre-ft/yr (8.74 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 238 ft³/s (6.74 m³/s) Mar. 5, 1972, gage height, 6.88 ft (2.097 m), from high-water mark in well, from rating curve extended above 60 ft³/s (1.70 m³/s), site and datum then in use; maximum gage height, 10.91 ft (3.325 m) Feb. 28, 1972, backwater from partially plugged culvert, site and datum then in use; minimum discharge, 2.0 ft³/s (0.057 m³/s) July 3, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53 ft³/s (1.50 m³/s) May 31, Aug. 23, gage height, 1.72 ft (0.524 m); minimum, 4.4 ft³/s (0.12 m³/s) July 25, 26, 30, 31, Aug. 11, gage height, 1.16 ft (0.354 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	10	6.5	6.8	7.6	13	8.0	7.6	18	5.6	4.6	6.2
2	6.1	7.3	6.5	6.5	6.9	21	6.8	11	6.5	5.6	4.6	9.7
3	5.9	6.8	6.5	7.2	6.8	25	6.8	16	8.8	5.6	4.8	10
4	5.7	6.7	6.5	7.7	6.8	8.4	6.8	7.2	19	5.9	5.0	15
5	6.5	6.6	6.5	6.8	6.8	7.7	6.8	7.6	7.2	5.6	4.6	8.5
6	6.0	6.7	6.5	6.8	6.8	8.4	6.8	6.5	6.2	5.6	4.6	6.2
7	6.8	6.6	6.5	6.8	6.8	15	6.8	6.2	6.2	5.6	4.6	6.2
8	6.0	6.6	12	6.7	6.8	20	8.4	6.2	6.2	5.6	4.6	6.2
9	6.7	6.6	6.8	6.5	6.0	30	6.8	6.2	6.2	5.6	4.6	6.2
10	5.6	6.6	6.5	6.6	11	8.4	6.8	5.9	6.2	5.6	4.6	6.2
11	5.7	6.6	6.2	11	8.2	7.6	6.8	5.9	6.0	5.6	4.6	6.2
12	5.6	6.6	6.2	11	11	15	6.8	6.5	6.1	5.6	4.6	6.2
13	5.6	6.5	6.8	8.3	7.6	13	8.4	5.9	6.1	5.6	4.6	6.2
14	5.6	6.6	6.8	7.5	7.0	13	6.8	5.9	6.0	5.6	4.8	6.2
15	5.6	9.8	7.2	12	6.9	9.7	8.4	5.9	6.2	5.8	4.8	6.2
16	5.6	13	6.9	12	7.1	7.6	7.2	12	6.2	5.6	5.0	6.2
17	5.6	20	9.7	11	7.1	7.2	6.8	7.6	6.2	5.6	4.8	6.2
18	5.6	7.6	7.2	17	7.2	7.2	6.8	5.9	6.0	5.6	4.8	7.6
19	5.7	9.3	6.2	7.9	6.8	7.2	6.8	5.9	6.2	5.6	4.8	17
20	5.7	6.8	6.2	7.3	8.2	6.8	6.8	5.9	6.4	5.6	4.8	12
21	5.7	9.7	6.2	7.3	8.0	7.6	7.2	5.9	6.0	5.5	4.8	8.4
22	5.7	6.8	9.7	7.0	14	8.0	8.4	5.6	5.8	5.6	4.8	7.2
23	5.6	6.5	19	6.9	7.2	16	6.8	6.5	5.9	5.3	12	21
24	11	6.5	7.2	6.9	7.0	8.0	6.5	5.9	5.8	5.3	32	14
25	7.2	6.8	17	6.8	9.4	8.0	7.6	6.2	5.6	5.0	28	15
26	6.1	6.5	29	6.9	8.3	11	8.8	17	5.8	4.4	11	7.2
27	6.0	6.5	11	7.0	8.3	8.4	6.5	11	5.6	4.6	6.8	6.8
28	20	6.5	7.6	6.8	24	7.2	6.5	10	5.6	4.6	6.8	17
29	8.2	6.5	7.4	6.8	---	6.8	6.5	6.2	5.6	4.8	12	11
30	6.3	6.5	7.2	6.8	---	6.8	6.5	6.5	5.6	4.6	17	5.9
31	25	---	6.8	6.5	---	7.6	---	38	---	4.6	6.8	---
TOTAL	225.9	232.3	267.9	253.1	236.4	354.6	213.7	266.6	209.2	166.7	236.0	271.9
MEAN	7.29	7.74	8.64	8.16	8.44	11.4	7.12	8.60	6.97	5.38	7.61	9.06
MAX	25	20	29	17	24	30	8.8	38	19	5.9	32	21
MIN	5.6	6.5	6.2	6.5	6.8	6.8	6.5	5.5	5.6	4.4	4.6	5.9
AC-FT	448	461	531	502	469	703	424	529	415	331	468	539

CAL YR 1976 TOTAL 3140.2 MEAN 8.58 MAX 65 MIN 4.0 AC-FT 6230
WTR YR 1977 TOTAL 2934.3 MEAN 8.04 MAX 38 MIN 4.4 AC-FT 5820

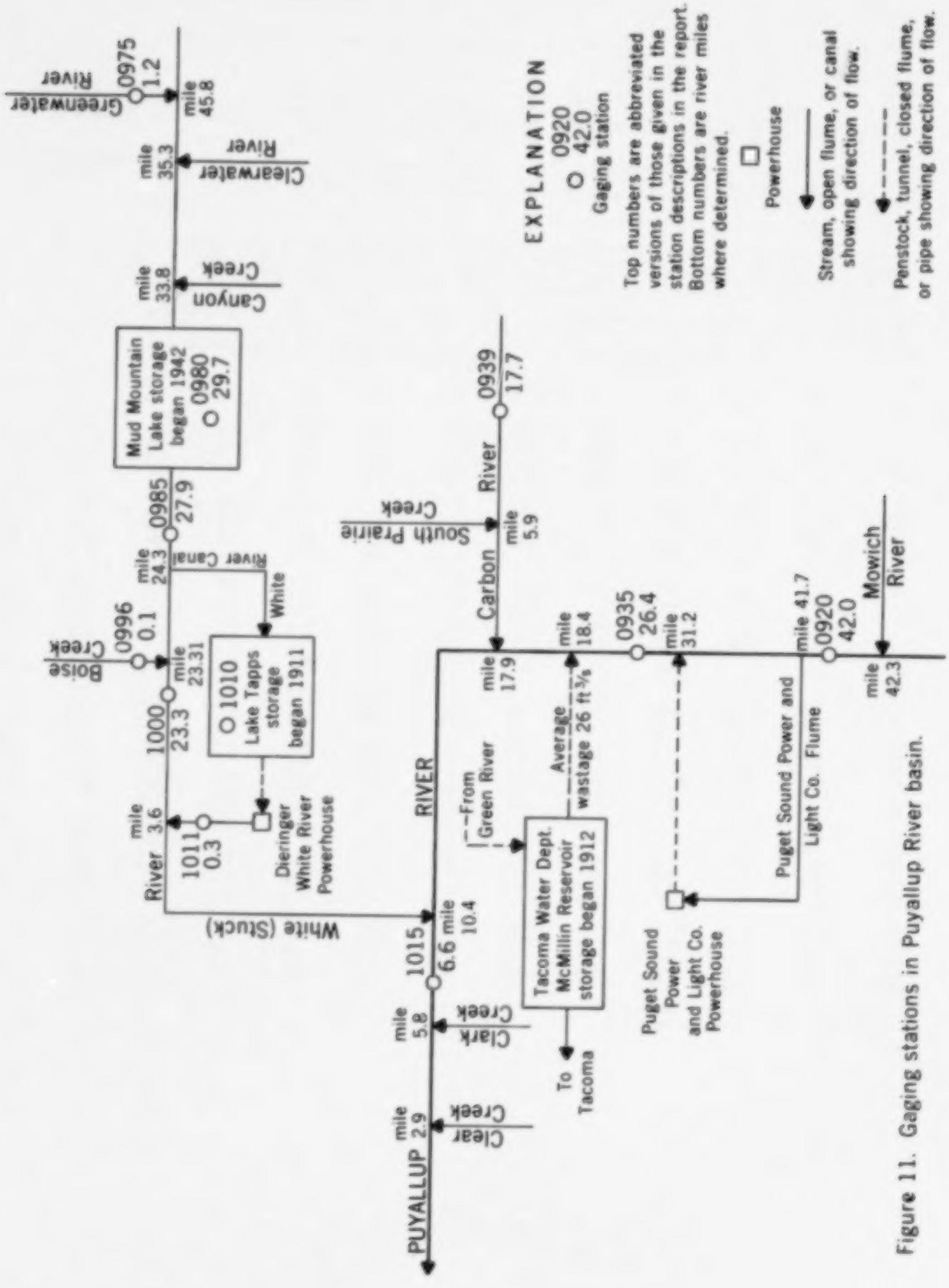
PUYALLUP
RIVER
Clear Creek
mile 2.9
Clark Creek
mile 5.8
1015
6.6
mile 10.4
White (Stuck) River
1011
0.3
mile 3.6
Dieringer White River Powerhouse
1000
23.3
1010
Lake Tapps storage began 1911
mile 23.31
0996
0.1
Boise Creek
mile 24.3
White River Canal
0985
27.9
Mud Mountain Lake storage began 1942
0980
29.7
mile 33.8
Canyon Creek
mile 35.3
Clearwater River
mile 45.8
0975
1.2
Greenwater River
From Green River
Tacoma Water Dept. McMillin Reservoir storage began 1912
To Tacoma
Average wastage 26 ft³/s
mile 17.9
Carbon River
mile 5.9
South Prairie Creek
0939
17.7
mile 18.4
0935
26.4
mile 31.2
Puget Sound Power and Light Co. Powerhouse
Puget Sound Power and Light Co. Flume
mile 41.7
0920
42.0
mile 42.3
Mowich River
EXPLANATION
0920
42.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 11. Gaging stations in Puyallup River basin.

12092000 PUYALLUP RIVER NEAR ELECTRON, WA

LOCATION.--Lat 46°54'14", long 122°02'02", in SE¼NW¼ sec.3, T.16 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 1,000 ft (305 m) upstream from Puget Sound Power & Light Co.'s flume headworks, 0.3 mi (0.5 km) downstream from Mowich River, 9.8 mi (15.8 km) southeast of Electron, and at mile 42.0 (67.6 km).

DRAINAGE AREA.--92.8 mi² (240.4 km²).

PERIOD OF RECORD.--October 1908 to September 1926, October 1926 to September 1933 (monthly discharge only, published in State of Washington Water-Supply Bulletin No. 6), October 1944 to September 1949, and October 1957 to current year.

REVISED RECORDS.--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area WSP 1566: 1945(M), 1947(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,640 ft (500 m), from river-profile map. Prior to Jan. 1, 1913, nonrecording gage and Jan. 1, 1913, to Sept. 30, 1926, Oct. 1, 1944, to Sept. 30, 1949, and Oct. 1, 1957, to Nov. 22, 1959 (gage destroyed by flood), water-stage recorder, at sites within 125 ft (38 m) upstream at different datums.

REMARKS.--Records good except those for discharges below 200 ft³/s (5.66 m³/s), which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--50 years, (1908-33, 1944-49, 1957-77), 531 ft³/s (15.04 m³/s), 77.70 in/yr (1,974 mm/yr), 384,700 acre-ft/yr (474 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Nov. 22, 1959, gage height, 11.9 ft (3.63 m) from flood marks, site and datum then in use, result of slope-area measurement; minimum daily discharge, 100 ft³/s (2.83 m³/s) Dec. 13, 14, 1972 during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1300	*1,550	43.9	*3.04	0.927

Minimum observed discharge, 157 ft³/s (4.45 m³/s) Feb. 7, 8, 9, gage height, 0.92 ft (0.280 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	367	440	184	250	191	250	349	657	1100	540	530	309
2	332	349	180	250	184	235	306	703	916	465	542	376
3	270	315	180	220	181	262	290	804	741	396	570	520
4	231	286	175	209	174	220	315	657	900	349	560	900
5	231	256	175	202	164	216	398	536	980	327	570	740
6	247	235	190	195	160	235	548	470	1200	311	510	445
7	262	231	302	184	157	306	741	465	1250	315	495	376
8	298	206	294	177	157	389	860	495	1030	350	520	319
9	311	266	270	170	157	394	644	475	769	385	536	311
10	367	239	239	167	240	302	500	525	699	380	554	327
11	298	224	224	177	250	270	460	505	664	470	572	327
12	258	209	220	188	367	294	398	450	600	505	664	340
13	262	250	216	170	349	262	445	425	620	407	632	358
14	243	280	206	164	274	239	389	445	620	421	590	323
15	228	220	216	191	247	224	389	435	614	455	602	266
16	213	620	216	266	231	216	425	435	608	475	602	220
17	200	657	213	435	224	206	376	445	650	455	664	202
18	190	542	216	996	220	202	366	470	720	376	644	206
19	190	412	200	650	209	213	319	440	713	340	650	250
20	180	349	190	465	209	202	396	445	620	403	670	400
21	170	319	185	385	206	202	311	554	602	490	727	460
22	165	290	180	332	209	216	394	560	602	536	525	319
23	160	266	209	298	191	254	530	560	542	520	596	425
24	167	270	190	270	177	243	741	530	578	566	699	425
25	405	298	370	250	164	224	956	475	602	626	510	403
26	389	247	632	235	164	274	832	554	536	566	584	362
27	294	215	578	220	213	412	657	480	500	626	398	311
28	286	200	435	202	290	311	632	465	554	590	470	294
29	266	190	371	198	---	270	671	450	548	435	699	311
30	235	190	319	195	---	243	638	416	515	460	727	349
31	394	---	286	191	---	290	---	760	---	510	470	---
TOTAL	8189	9023	8061	8518	5959	8092	15150	16181	21769	14064	18100	11350
MEAN	264	301	260	275	213	261	505	522	726	454	584	378
MAX	405	657	632	996	367	412	956	804	1250	626	727	900
MIN	160	190	175	164	157	202	290	416	500	311	398	202
CFSM	2.85	3.24	2.80	2.96	2.30	2.81	5.44	5.63	7.82	4.89	6.29	4.08
IN.	3.28	3.62	3.23	3.41	2.39	3.24	6.07	6.49	8.73	5.64	7.26	4.55
AC-FT	16240	17900	15990	16900	11820	16050	30050	32100	43180	27900	35910	22530

CAL YR 1976 TOTAL 174422 MEAN 477 MAX 3190 MIN 160 CFSM 5.14 IN 69.92 AC-FT 346000
WTR YR 1977 TOTAL 144470 MEAN 396 MAX 1250 MIN 157 CFSM 4.27 IN 57.91 AC-FT 286600

12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW¼SW¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft (183 m) downstream from highway bridge, 4.0 mi (6.4 km) south of Orting, 8.3 mi (13.7 km) upstream from Carbon River, and at mile 26.4 (42.5 km).

DRAINAGE AREA.--172 mi² (445 km²).

PERIOD OF RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft (107.44 m) above mean sea level, unadjusted. Prior to Feb. 6, 1946, at site 600 ft (183 m) upstream at datum 8.93 ft (2.722 m) higher. Supplementary water-stage recorder 200 ft (61 m) upstream at datum 7.1 ft (2.16 m) higher than present gage datum used at times during period in 1942-46. Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft (1.52 m) higher.

REMARKS.--Records good. Up to 400 ft³/s (11.3 m³/s) diverted for Electron powerplant of Puget Sound Power & Light Co., returned to river above gage. Flow regulated by Electron powerplant.

AVERAGE DISCHARGE.--46 years, 714 ft³/s (20.22 m³/s) 56.37 in/yr (1,432 mm/yr), 517,300 acre-ft/yr (638 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s (433 m³/s) Nov. 20, 1962, gage height, 11.82 ft (3.603 m) present datum, from rating curve extended above 8,600 ft³/s (244 m³/s) on basis of slope-area measurement at gage height 12.25 ft (3.734 m) present datum; minimum discharge, 25 ft³/s (0.71 m³/s) Nov. 28, 1952; minimum daily, 59 ft³/s (1.67 m³/s) Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1445	*2,110	59.8	*5.81	1.771

Minimum recorded, 170 ft³/s (4.81 m³/s) Sept. 18, but may have been less during period of no gage-height record Oct. 2-7, or Jan. 7-12; minimum daily, 203 ft³/s (5.75 m³/s) Feb. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	616	276	355	256	365	635	810	1730	614	570	435
2	362	440	276	345	230	375	520	970	1380	522	564	465
3	300	300	270	318	220	510	486	1060	1100	430	621	552
4	260	355	266	306	210	445	486	906	1410	380	614	1090
5	250	326	262	286	215	365	554	726	1330	340	620	916
6	260	310	266	270	209	380	761	635	1560	326	550	516
7	280	302	360	260	206	455	1010	607	1500	314	520	440
8	300	345	365	250	203	677	1230	600	1360	360	566	375
9	330	330	375	245	203	800	922	621	970	400	570	350
10	375	316	316	240	276	690	712	677	866	390	594	365
11	350	290	298	245	370	570	607	677	826	465	614	370
12	270	300	290	250	430	656	546	582	740	570	712	375
13	262	286	286	246	492	594	621	540	747	435	726	400
14	266	286	270	239	370	534	546	582	740	430	649	380
15	250	302	262	270	326	400	520	582	726	470	621	318
16	246	740	282	326	306	465	621	607	712	510	642	250
17	232	786	270	564	294	420	540	656	740	492	663	229
18	232	747	290	1230	290	410	492	684	818	410	649	229
19	220	522	270	922	270	410	445	616	834	340	670	350
20	225	440	266	621	262	390	420	600	726	390	740	400
21	215	385	262	516	270	380	420	712	684	510	789	576
22	225	365	262	435	282	390	480	726	698	570	576	415
23	222	335	322	380	266	445	670	747	616	570	588	492
24	215	322	286	345	243	440	922	747	628	607	800	564
25	504	370	390	316	236	405	1220	663	677	608	594	528
26	528	310	930	298	236	445	1080	768	607	600	656	470
27	355	294	930	262	276	674	842	684	552	604	504	395
28	348	282	663	266	375	628	789	670	588	604	465	370
29	340	278	534	254	---	522	834	670	620	465	760	425
30	310	275	455	266	---	450	782	600	558	465	930	470
31	440	---	395	246	---	460	---	1010	---	540	570	---
TOTAL	9429	11667	11283	11370	7846	15548	20739	21031	27127	14981	19825	13536
MEAN	304	389	364	367	280	502	691	704	904	483	640	451
MAX	528	786	930	1230	492	800	1230	1060	1730	690	930	1090
MIN	215	275	262	239	203	365	420	540	552	314	465	229
CFSM	1.77	2.26	2.12	2.13	1.63	2.92	4.02	4.09	5.26	2.81	3.72	2.62
IN.	2.04	2.52	2.44	2.46	1.70	3.36	4.49	4.72	5.87	3.24	4.29	2.93
AC-FT	18700	23140	22380	22550	15560	30840	41140	41710	53810	29710	39320	26850

CAL YR 1976 TOTAL 231726 MEAN 633 MAX 5350 MIN 215 CFSM 3.68 IN 50.12 AC-FT 459680
WTR YR 1977 TOTAL 185162 MEAN 507 MAX 1730 MIN 203 CFSM 2.95 IN 40.05 AC-FT 367300

12093510 PUYALLUP RIVER AT ORTING, WA

LOCATION.--Lat 47°05'21", long 122°12'43", in SE¼NE¼ sec. 31, T.19 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on Calistoga Street bridge, 0.7 mi (1.1 km) south of Orting, upstream from Carbon River.

PERIOD OF RECORD.--Water years 1976, Sept. 1 to Sept. 2, 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
SEP											
01...	0930	460	46	6.7	10.1	25	11.2	99	B100	B20	22
01...	1120	450	46	6.7	12.3	--	11.2	105	--	--	--
01...	1240	455	49	6.8	13.8	--	10.8	104	--	--	--
01...	1430	450	47	6.8	15.0	--	10.6	105	B160	13	--
01...	1700	444	48	6.9	15.2	--	10.3	103	--	--	--
01...	1825	440	50	6.9	14.0	--	10.5	102	--	--	--
01...	2030	435	49	7.2	12.6	20	10.5	99	320	B20	--
01...	2145	431	48	7.0	12.4	--	10.5	98	--	--	--
01...	2255	429	51	6.9	12.0	--	10.5	99	--	--	--
02...	0005	425	48	7.1	13.0	--	10.3	98	--	--	--
02...	0130	422	48	7.0	12.8	--	10.5	99	--	--	--
02...	0245	418	50	7.2	12.8	19	10.4	98	B870	17	--
02...	0425	414	53	7.1	12.4	--	10.4	97	--	--	--
02...	0535	410	51	6.8	12.2	--	10.5	98	--	--	--
02...	0650	406	50	6.8	12.0	--	10.5	98	--	--	--
02...	0815	402	50	7.0	11.8	--	10.6	98	--	--	--

DATE	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
SEP										
01...	5	6.6	1.4	2.6	.6	21	0	17	6.7	5.0
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	21	0	17	5.3	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
SEP										
01...	1.4	.1	13	41	42	.07	.04	.10	.07	.01
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	97	.07	.01	.09	.11	.01
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12093900 CARBON RIVER AT FAIRFAX, WA

LOCATION.--Lat 47°00'47", long 122°00'42", in SW¼SW¼ sec.26, T.18 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank at Fairfax, 0.7 mi (1.1 km) downstream from Evans Creek, and at mile 17.7 (28.5 km).

DRAINAGE AREA.--76.2 mi² (197.4 km²).

PERIOD OF RECORD.--November 1910 to July 1912, October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,330 ft (405 m), from topographic map. Nov. 25, 1910, to July 12, 1912, nonrecording gage at approximately same site at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years (water years 1966-77) 436 ft³/s (12.35 m³/s), 77.70 in/yr (1,974 mm/yr), 315,900 acre-ft/yr (390 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,480 ft³/s (212 m³/s) Dec. 25, 1967, gage height, 6.25 ft (1.905 m); minimum, 73 ft³/s (2.07 m³/s) Nov. 4, 6, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1700	*2,150	60.9	*3.96	1.207

Minimum discharge, 90 ft³/s (2.55 m³/s) Oct. 23, 24, gage height, 1.08 ft (0.329 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228	518	150	228	150	162	310	626	1060	445	355	380
2	228	350	150	216	137	176	273	665	872	410	360	327
3	196	265	160	196	130	204	256	666	700	350	360	385
4	150	243	135	176	125	173	273	528	906	314	380	606
5	153	216	130	150	120	166	350	625	872	277	305	700
6	166	191	135	148	115	170	536	375	1010	265	360	600
7	170	162	250	140	113	161	716	400	1060	265	341	600
8	173	208	256	132	109	220	848	476	960	293	341	350
9	173	201	210	127	111	256	637	635	707	285	336	309
10	225	176	191	125	145	214	400	566	612	269	341	289
11	225	161	170	127	105	197	415	662	582	332	360	281
12	170	148	176	140	301	225	370	395	552	440	410	273
13	156	137	170	130	370	201	410	370	566	410	430	201
14	135	132	166	123	250	188	350	625	558	350	410	201
15	125	173	170	148	206	170	365	395	548	350	395	230
16	115	662	170	211	185	173	465	405	536	360	365	197
17	110	777	173	522	185	159	375	415	576	385	300	173
18	105	735	182	1320	191	159	327	440	637	314	300	161
19	100	662	159	866	173	167	289	405	630	309	375	179
20	99	365	168	536	166	156	260	410	562	293	400	273
21	97	301	162	305	166	156	273	566	570	336	420	415
22	95	269	162	323	170	166	316	566	600	336	336	309
23	91	235	170	277	150	196	460	552	520	350	355	370
24	93	235	150	263	140	191	735	506	516	365	520	390
25	280	332	341	218	140	170	952	450	570	405	425	332
26	277	256	805	201	135	225	756	480	510	390	558	295
27	196	211	700	185	166	350	596	430	605	385	460	250
28	196	191	692	170	191	269	558	410	650	395	380	263
29	208	182	380	159	---	228	612	395	486	310	566	261
30	170	173	305	153	---	201	582	375	430	297	860	293
31	286	---	261	150	---	230	---	650	---	341	516	---
TOTAL	5186	8675	7359	8227	4717	6156	14140	14560	19622	10646	12821	9712
MEAN	167	289	237	265	168	199	471	470	654	343	414	324
MAX	286	777	805	1320	370	350	952	665	1060	445	860	700
MIN	91	132	130	123	105	156	256	370	430	265	336	161
CFSM	2.19	3.79	3.11	3.48	2.21	2.61	6.18	6.17	8.58	4.50	5.43	4.25
IN.	2.53	4.23	3.59	4.02	2.30	3.01	6.90	7.11	9.58	5.20	6.26	4.74
AC-FT	10290	17210	14600	16320	9360	12210	28050	28880	38920	21110	25430	19260

CAL YR 1976 TOTAL 135902 MEAN 372 MAX 3130 MIN 91 CFSM 4.88 IN 66.39 AC-FT 269700
WTR YR 1977 TOTAL 121817 MEAN 334 MAX 1320 MIN 91 CFSM 4.38 IN 59.47 AC-FT 241600

12097500 GREENWATER RIVER AT GREENWATER, WA

LOCATION.--Lat 47°09'13", long 121°38'04", in NW¼NW¼ sec.11, T.19 N., R.9 E., Pierce County, Hydrologic Unit 17110014, on left bank 0.9 mi (1.4 km) east of Greenwater and 1.2 mi (1.9 km) upstream from mouth.

DRAINAGE AREA.--73.5 mi² (190.4 km²).

PERIOD OF RECORD.--September 1911 to August 1912 (fragmentary), May 1929 to September 1977 (discontinued). Published as "near Enumclaw" 1911-12.

REVISED RECORDS.--WSP 1716: 1947(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,727.07 ft (526.411 m). Prior to Aug. 10, 1912, nonrecording gages at approximately present site at different datums. May 1, 1929, to Aug. 14, 1934, water-stage recorder at site 900 ft (274 m) upstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--48 years, 211 ft³/s (5.976 m³/s) 38.98 in/yr (990 mm/yr), 152,900 acre-ft/yr (189 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft³/s (152 m³/s) Nov. 22, 1959, gage height, 7.67 ft (2.338 m), from rating curve extended above 1,200 ft³/s (34.0 m³/s) on basis of slope-area measurement of peak flow; minimum, 23 ft³/s (0.65 m³/s) Oct. 7, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 640 ft³/s (18.1 m³/s) Apr. 8, gage height, 2.74 ft (0.835 m); minimum, 34 ft³/s (0.96 m³/s) Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	100	60	102	94	99	235	363	230	107	56	94
2	64	82	59	96	91	99	225	369	255	104	54	86
3	63	76	58	92	88	100	197	393	261	102	52	82
4	63	72	57	88	85	97	217	357	280	103	50	79
5	62	68	57	80	82	99	267	317	284	101	53	76
6	62	65	57	78	80	109	390	287	304	104	52	69
7	60	63	82	76	78	116	521	271	317	95	47	65
8	59	62	83	73	76	132	579	258	311	92	46	67
9	58	60	78	71	76	144	427	250	286	87	45	63
10	60	58	75	72	82	132	325	267	270	86	44	59
11	60	57	72	68	89	124	274	263	258	87	43	57
12	58	55	72	67	107	128	246	246	246	88	42	55
13	54	54	71	67	115	122	239	238	235	85	40	53
14	54	53	69	65	104	115	224	235	222	82	39	52
15	54	58	68	68	100	109	217	225	211	80	38	51
16	53	83	68	78	97	107	222	210	200	77	37	49
17	52	96	68	144	97	104	207	200	190	83	37	49
18	52	118	72	222	99	104	194	205	181	78	36	48
19	51	97	69	270	96	109	181	195	174	74	36	51
20	49	91	67	220	94	107	172	195	167	72	36	59
21	49	83	67	187	94	107	169	220	161	70	38	111
22	49	80	67	166	92	118	180	215	154	68	40	99
23	49	76	85	150	88	140	247	220	147	66	43	94
24	48	75	76	136	85	138	361	200	141	65	75	107
25	77	75	92	128	86	130	473	190	135	64	65	104
26	79	71	182	122	85	148	472	195	130	64	96	100
27	64	65	202	115	86	215	418	180	124	62	99	96
28	62	64	168	107	97	185	387	175	120	60	79	92
29	59	63	144	102	---	160	390	170	115	62	83	94
30	57	62	126	99	---	144	373	160	111	62	144	104
31	69	---	113	96	---	154	---	200	---	58	111	---
TOTAL	1814	2182	2684	3505	2543	3895	9029	7469	6220	2488	1756	2265
MEAN	58.5	72.7	86.6	113	90.8	126	301	241	207	80.3	56.6	75.5
MAX	79	118	202	270	115	215	579	393	317	107	144	111
MIN	48	53	57	65	76	97	169	160	111	58	36	48
CFSM	.80	.99	1.18	1.54	1.24	1.71	4.10	3.28	2.82	1.09	.77	1.03
IN.	.92	1.10	1.36	1.77	1.29	1.97	4.57	3.78	3.15	1.26	.89	1.15
AC-FT	3600	4330	5320	6950	5040	7730	17910	14810	12340	4930	3480	4490

CAL YR 1976 TOTAL 76951 MEAN 210 MAX 1770 MIN 48 CFSM 2.86 IN 38.95 AC-FT 152600
WTR YR 1977 TOTAL 45850 MEAN 126 MAX 579 MIN 36 CFSM 1.71 IN 23.21 AC-FT 90940

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'27", long 121°55'48", in NE¼NE¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi (8.0 km) southeast of Buckley, 5.6 mi (9.0 km) downstream from Clearwater River, and at mile 29.7 (47.8 km).

DRAINAGE AREA.--400 mi² (1,036 km²).

PERIOD OF RECORD.--October 1943 to current year. Monthend contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is at mean sea level (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earth-fill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft (131 hm³) between elevations 895 ft (272.8 m), invert of outlet tunnel, and 1,215 ft (370.3 m), spillway crest. Storage is not retained but is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 55,880 acre-ft (68.9 hm³) Aug. 23, 1974, elevation, 1,150.0 ft (350.52 m); no pool at times in some years.

EXTREMES FOR CURRENT YEAR.-- Maximum contents observed, 7,972 acre-ft (9.83 hm³) May 5, elevation, 1,030.9 ft (314.22 m); minimum observed, 40 acre-ft (0.049 hm³) Feb. 8, elevation, 907.4 ft (276.58 m).

Capacity table (elevation, in feet, and total contents, acre-feet)
(Based on area maps by Corps of Engineers in 1939)

907	39	930	191	970	1,520	1,070	17,380
910	52	935	266	985	2,510	1,100	29,050
915	77	940	366	1,000	3,830	1,150	55,880
920	107	945	491	1,020	6,260		
925	141	955	817	1,040	9,680		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2145	2352	96	89	90	67	94	6042	2103	244	2435	1816
2	2145	2236	95	90	438	66	97	6429	2830	245	2435	1767
3	2103	2159	293	90	98	69	94	6255	3352	325	2732	1962
4	2131	2145	491	57	125	67	91	6140	3604	236	2397	2089
5	2049	2103	641	57	57	58	96	7972	4905	157	2390	2117
6	2049	2082	856	62	57	58	121	6773	4726	284	2435	1834
7	2042	2069	1308	67	41	59	1278	5277	4691	491	2375	505
8	2049	2055	1522	57	40	67	3547	4050	4644	743	2375	966
9	2055	2076	1898	254	43	72	5393	2938	2981	1578	2367	790
10	2069	2042	1743	241	42	68	5779	2272	2435	1943	2367	941
11	2096	2035	1423	131	56	68	5631	2096	2272	2009	2375	979
12	2131	2035	1278	129	60	70	4176	1791	2229	2316	2405	949
13	2042	2022	1349	57	66	68	3084	1834	2345	2360	2435	736
14	2042	2015	736	57	65	70	2131	1982	2159	2360	2412	937
15	2029	2049	323	112	66	70	1879	1995	1059	2375	2397	1104
16	2015	1578	366	323	66	70	2015	2049	896	2405	2390	609
17	2002	848	77	1114	65	70	1982	2089	892	2412	2390	641
18	2002	1809	62	1943	67	69	1695	2009	1308	2390	2390	848
19	1995	134	62	1248	67	70	1936	2029	1142	2360	2382	1298
20	1989	127	90	533	67	70	581	2076	1511	2360	2412	1091
21	1982	117	89	1423	67	70	335	2145	684	2375	2412	876
22	1982	113	83	2022	65	72	1243	2208	584	2405	2397	519
23	1982	107	158	2009	64	74	2009	2251	339	2420	2316	491
24	1976	89	824	2009	64	75	2215	2145	206	2420	2589	962
25	20[illegible]2	113	983	2009	65	75	2565	1904	491	2488	2435	813
26	2201	266	2166	2009	65	74	2724	761	370	2465	2473	928
27	2103	266	2465	1601	67	92	2612	746	366	2473	2488	657
28	2062	218	1713	366	65	87	2557	711	284	2480	2375	657
29	2096	323	118	192	---	85	2589	722	372	2420	2397	674
30	2131	1180	95	228	---	81	2542	1595	181	2382	2511	962
31	2015	---	86	269	---	80	---	1175	---	2412	2287	---
MAX	2201	2352	2465	2022	438	92	5779	7972	4905	2488	2732	2117
MIN	1976	89	62	57	40	58	91	711	181	157	2287	491
††	981.3	933.3	916.8	923.3	912.9	917.1	1,007.5	974.0	932.2	983.9	977.3	955.7
†	2,237	238	88	129	66	90	4,633	1,755	221	2,428	1,963	844
‡	+97	-1,999	-150	+41	-63	+24	+4,543	-2,878	-1,534	+2,207	-465	-1,119

CAL YR 1976...........................‡ -3,252
WTR YR 1977...........................‡ -1,296

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents in acre-feet.

12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'55", in SW¼NW¼ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi (0.6 km) upstream from Red Creek, 1.7 mi (2.7 km) downstream from Mud Mountain Dam, 3.8 mi (6.1 km) east of Buckley, 7.4 mi (11.9 km) downstream from Clearwater River and at mile 27.9 (44.9 km).

DRAINAGE AREA.--401 mi^2 (1,039 km^2).

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year. Water temperatures March 1971 to September 1972, sediment records November 1971 to November 1972.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage and Dec. 9, 1928, to Nov. 30, 1933, water-stage recorder, at site 3 mi (4.8 km) upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records good except periods Apr. 6-13 and June 4-10, which are fair. Flow regulated by Mud Mountain Lake (see sta 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No diversion above station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--44 years, (water years, 1929-33, 1939-77), 1,460 ft^3/s (41.35 m^3/s) 49.44 in/yr (1,256 mm/yr), 1,058,000 acre-ft/yr (1,300 hm^3/yr); adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft^3/s (481 m^3/s) Feb. 26, 1932, gage height, 17.5 ft (5.33 m), site and datum then in use, from rating curve extended above 3,500 ft^3/s (99.1 m^3/s); probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958, Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily, 59 ft^3/s (1.67 m^3/s) June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft (7.13 m), from floodmarks, at former site, discharge, 28,000 ft^3/s (793 m^3/s), from rating curve extended above 3,500 ft^3/s (99.1 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,280 ft^3/s (150 m^3/s) June 8, elevation, 803.76 ft (244.986 m); minimum, 89 ft^3/s (2.52 m^3/s) Aug. 2, elevation, 798.84 ft (243.486 m); minimum daily, 402 ft^3/s (11.4 m^3/s) Nov. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	720	1040	530	720	558	665	1560	1110	2060	1010	892	928
2	705	850	482	670	595	685	1520	1930	1810	994	685	790
3	660	720	454	630	542	802	1460	1960	1690	898	1080	874
4	582	650	438	595	534	700	1500	984	2000	826	928	1340
5	558	600	434	530	514	665	1720	1080	2610	750	940	1510
6	558	562	418	514	502	705	2040	1790	3200	725	994	1340
7	550	538	595	522	494	770	2150	1760	3410	655	892	850
8	554	534	600	462	486	922	2140	1640	3500	570	892	814
9	570	542	715	458	490	1010	2140	1510	2910	538	880	700
10	590	518	695	474	570	874	2020	1290	2060	730	874	660
11	595	498	635	490	705	802	1960	1400	1920	710	898	665
12	550	482	562	534	790	856	1850	1140	1710	820	946	670
13	534	470	650	526	862	808	1460	1050	1800	790	976	655
14	526	454	645	506	730	760	1470	1160	2020	780	940	595
15	522	660	526	534	665	730	1190	1110	1700	826	910	670
16	498	988	562	615	630	725	1460	1150	1580	868	892	586
17	482	1050	518	750	620	680	1300	1200	1540	898	898	498
18	458	1470	570	2050	635	685	1180	1140	1640	826	904	438
19	446	1030	526	2440	590	750	1400	1070	1580	770	886	605
20	438	826	502	1350	574	730	1160	1050	1600	760	940	808
21	434	740	502	946	582	745	856	1180	1420	808	994	1030
22	430	695	498	1020	570	820	704	1270	1370	844	904	826
23	422	645	610	910	546	976	1330	1380	1250	868	790	785
24	426	615	562	820	526	934	1910	1380	1210	904	1230	910
25	650	680	558	765	530	862	2690	1450	1230	1010	946	844
26	808	630	1470	820	526	946	2600	1340	1140	976	1110	808
27	595	562	2060	982	558	1510	2030	1150	1140	1020	1040	745
28	562	538	1790	720	635	1260	1780	1050	1050	1030	820	705
29	582	402	1120	610	---	1070	1920	984	1080	874	1030	655
30	526	660	928	590	---	946	1140	1140	988	808	1510	745
31	590	---	802	610	---	1020	---	1270	---	868	1300	---
TOTAL	17121	20649	21957	24163	16559	26413	49640	40918	54298	25754	29921	24049
MEAN	552	688	708	779	591	852	1655	1320	1810	831	965	802
MAX	808	1470	2060	2440	862	1510	2690	1960	3500	1030	1510	1510
MIN	422	402	418	458	486	665	704	984	988	538	685	438
AC-FT	33960	40960	43550	47930	32840	52390	98460	81160	107700	51080	59350	47700
†	+97	-1,999	-150	+41	-63	+24	+4,543	-2,878	-1,534	+2,207	-465	-1,119
MEAN‡	554	655	706	780	590	852	1,731	1,273	1,785	866	957	783
CFSM‡	1.38	1.63	1.76	1.95	1.47	2.12	4.32	3.17	4.45	2.16	2.39	1.95
IN.‡	1.59	1.82	2.03	2.24	1.53	2.45	4.82	3.66	4.96	2.49	2.75	2.18
AC-FT‡	34,060	38,960	43,400	47,970	32,780	52,410	103,000	78,280	106,170	53,290	58,880	46,580

CAL YR 1976: TOTAL 512,363 MEAN 1,400 MAX 10,400 MIN 179 AC-FT 1,016,000
DO.....: MEAN‡ 1,399 CFSM‡ 3.49 IN† 47.37 AC-FT‡ 1,013,000
WTR YR 1977: TOTAL 351,442 MEAN 963 MAX 3,500 MIN 402 AC-FT 697,100
DO.....: MEAN‡ 961 CFSM‡ 2.40 IN‡ 32.54 AC-FT‡ 695,800

† Change in contents, in acre-feet, in Mud Mountain Lake, furnished by Corps of Engineers.
‡ Adjusted for change in contents in Mud Mountain Lake.

12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE¼SE¼ sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on right bank at upstream side of county road bridge, 1.0 mi (1.6 km) northeast of Buckley, and at mile 0.1 (0.2 km).

DRAINAGE AREA.--15.4 mi² (39.9 km²).

PERIOD OF RECORD.--March to September 1977. Chemical analyses January 1963 to September 1964, October 1972 to September 1973.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records good. Flow partly regulated by millpond at mile 5.6 (9.0 km). Diversions above station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft³/s (0.057 m³/s) during low flow periods enters Boise Creek above millpond.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period Mar. 11 to Sept., 120 ft³/s (3.40 m³/s) Aug. 26, gage height, 2.11 ft (0.643 m); minimum, 4.2 ft³/s (0.12 m³/s) Aug. 16, 17, gage height, 0.85 ft (0.259 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	70	16	71	9.1	5.7	25
2						---	54	18	60	9.4	5.0	20
3						---	41	21	51	9.4	5.2	20
4						---	38	27	74	9.4	5.2	28
5						---	36	24	53	8.7	5.0	23
6						---	37	21	42	9.1	5.5	17
7						---	38	21	35	8.1	6.2	14
8						---	46	23	30	7.7	5.2	13
9						---	41	20	27	7.7	5.0	12
10						---	34	20	23	8.4	5.2	12
11						36	30	25	22	9.1	5.5	11
12						51	24	20	21	9.4	5.7	10
13						48	25	18	20	8.4	6.2	9.4
14						38	25	24	18	7.2	6.2	9.1
15						34	29	23	18	6.7	5.7	8.7
16						31	38	32	16	6.9	4.7	8.7
17						27	32	44	15	7.4	4.9	8.4
18						27	27	48	15	7.4	5.0	9.1
19						30	24	40	15	6.7	5.2	11
20						29	22	32	14	6.0	5.7	15
21						30	21	29	14	6.0	6.0	28
22						33	23	25	15	6.7	6.0	18
23						42	23	27	13	6.7	15	33
24						38	23	35	12	6.9	29	38
25						38	21	28	12	6.7	19	29
26						45	22	37	11	6.2	74	23
27						59	23	34	11	5.7	29	19
28						47	19	36	11	6.2	20	21
29						39	18	39	10	6.7	31	26
30						33	17	33	9.1	6.9	68	23
31						41	---	51	---	6.4	37	---
TOTAL						---	921	891	758.1	233.3	442.0	542.4
MEAN						---	30.7	28.7	25.3	7.53	14.3	18.1
MAX						---	70	51	74	9.4	74	38
MIN						---	17	16	9.1	5.7	4.7	8.4
AC-FT						---	1830	1770	1500	463	877	1080

12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE¼SE¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 150 ft (46 m) downstream from railway bridge, 200 ft (61 m) downstream from Boise Creek, 1.0 mi (1.6 km) northeast of Buckley, and at mile 23.3 (37.5 km).

DRAINAGE AREA.--427 m² (1,106 km²).

PERIOD OF RECORD.--July 1910 to November 1911, April to September 1977. February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 620 ft (189 m), from topographic map. June 8, 1910 to Nov. 30, 1911, nonrecording gage at site 150 ft (46 m) upstream at different datum, and Jan. 18, 1913 to Sept. 30, 1938, water-stage recorder at site 100 ft (30 m) upstream at mean sea level datum (levels by Puget Sound Power and Light Co.).

REMARKS.--Records good. Since November 1911, White River flume has diverted from left bank 1.0 mi (1.6 km) upstream for storage in Lake Tapps (see sta 12101000), average flow diverted for the period 1963-77 was about 930 ft³/s (26.3 m³/s). Water is returned to White River 19.7 mi (31.7 km) downstream via the Lake Tapps Diversion (see sta 12101100) after power development at Dieringer-White powerplant. Since 1942, flow regulated by Mud Mountain Lake (see sta 12098000) for flood control.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft³/s (654 m³/s) Dec. 18, 1917 during period of combined flows; minimum, not determined. River only after April 1977, maximum discharge, 1,970 ft³/s (55.8 m³/s) June 8, 1977, gage height, 5.16 ft (1.573 m); minimum, 31 ft³/s (0.88 m³/s) Aug. 2, 1977, gage height, 2.50 ft (0.762 m); minimum daily, 42 ft³/s (1.19 m³/s), Aug. 7, 15, 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period Apr. 28 to Sept. 30, 1,970 ft³/s (55.8 m³/s) June 8, gage height, 5.16 ft (1.573 m); minimum, 31 ft³/s (0.88 m³/s) Aug. 2, gage height, 2.50 ft (0.762 m); minimum daily, 42 ft³/s (1.19 m³/s) Aug. 7, 15, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, APRIL TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	72	417	45	45	62
2							---	67	208	44	61	58
3							---	75	116	44	88	61
4							---	119	250	44	47	68
5							---	109	840	45	47	59
6							---	55	1410	47	43	54
7							---	55	1600	43	42	56
8							---	55	1680	44	43	50
9							---	51	1100	44	44	49
10							---	51	228	44	45	50
11							---	55	94	47	47	49
12							---	51	54	55	45	48
13							---	50	70	77	44	47
14							---	61	158	84	43	47
15							---	54	67	44	42	48
16							---	67	50	44	43	48
17							---	79	49	50	42	47
18							---	84	50	1060	43	47
19							---	73	49	1000	43	49
20							---	65	49	990	45	52
21							---	62	48	1060	48	64
22							---	58	49	802	45	54
23							---	61	48	52	102	68
24							---	68	47	49	82	75
25							---	62	47	50	55	65
26							---	70	45	49	114	59
27							---	67	47	47	67	55
28							80	70	45	47	58	62
29							102	75	47	45	82	67
30							212	68	45	47	104	57
31							---	88	---	47	80	---
TOTAL							---	2097	9007	6190	1779	1673
MEAN							---	67.6	300	200	57.4	55.8
MAX							---	119	1680	1060	114	75
MIN							---	50	45	43	42	47
AC-FT							---	4160	17870	12280	3530	3320

12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE¼NE¼ sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi (2.7 km) east of Dieringer and 3.5 mi (5.6 km) northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 0.7 ft (0.2 m) above mean sea level (levels by Puget Sound Power & Light Co.).

REMARKS.--Reservoir is formed by a diked natural lake into which a great part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959 put into use Oct. 1, 1958), 46,600 acre-ft (57.5 hm^3) between elevations 515 ft (157.0 m) normal minimum pool, and 543 ft (165.5 m) normal maximum pool. Dead storage unknown. Figures given herein represent usable contents. Reservoir is used for power development at the Dieringer White River powerplant.

COOPERATION.--Gage-height record and contents curve furnished by Puget Sound Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft (63.8 hm^3) June 30, 1958, gage height, 541.57 ft (165.071 m), capacity table dated Jan. 19, 1920; maximum gage height observed, 543.04 ft (165.519 m) June 19, 1967; minimum contents observed, 458 acre-ft (0.565 hm^3) June 24, 1912, gage height, 505.70 ft (154.137 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 46,655 acre-ft (57.5 hm^3) July 18, gage height, 543.00 ft (165.506 m); minimum observed, 6,243 acre-ft (7.70 hm^3) May 5, gage height, 521.20 ft (158.862 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	542.06	44,288	-
Oct. 31	542.28	44,842	+554
Nov. 30	541.15	42,060	-2,782
Dec. 31	542.08	44,338	+2,278
CAL YR 1976	-	-	+21,457
Jan. 31	540.60	40,739	-3,599
Feb. 28	529.00	16,923	-23,816
Mar. 31	525.67	11,877	-5,046
Apr. 30	523.04	8,304	-3,573
May 31	535.13	28,358	+20,054
June 30	542.70	45,900	+17,542
July 31	542.51	45,421	-479
Aug. 31	542.55	45,522	+101
Sept. 30	542.24	44,742	-780
WTR YR 1977	-	-	+454

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW¼NW¼ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft (259 m) downstream from White River powerplant at Dieringer and 1,400 ft (427 m) upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (18 m), from topographic map.

REMARKS.--Records excellent. Flow regulated by White River powerplant.

AVERAGE DISCHARGE.--19 years, 986 ft^3/s (27.92 m^3/s), 714,400 acre-ft/yr (881 hm^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft^3/s (71.6 m^3/s) Jan.29, 1965, gage height, 6.23 ft (1.899 m); minimum, 7.2 ft^3/s (0.20 m^3/s) Sept. 29, 1967, gage height, 0.20 ft (0.061 m); minimum daily, 10 ft^3/s (0.28 m^3/s) Aug. 21, 22, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,010 ft^3/s (56.9 m^3/s) Jan. 7, gage height, 5.15 ft (1,570 m); minimum, 23 ft^3/s (0.65 m^3/s), May 12, 13, gage height, 0.49 ft (0.149 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	653	737	717	722	744	582	1050	1590	35	939	740	1200
2	674	1150	494	905	554	575	1100	1570	1000	959	740	1130
3	696	838	200	1390	1190	329	1050	1610	34	855	736	1100
4	558	555	566	584	622	794	821	1630	34	769	738	1140
5	523	549	517	950	878	438	1190	1560	34	705	798	1010
6	485	471	225	699	981	803	1600	1580	913	682	810	820
7	525	378	39	1180	992	691	1600	1600	1840	649	807	1290
8	627	565	279	1570	937	865	1590	1610	1560	700	805	1150
9	626	475	39	1570	1160	1190	1590	643	1170	432	803	1160
10	566	626	569	1380	1100	1140	1590	30	1740	533	800	1160
11	29	583	498	1230	1130	1020	1600	35	1790	846	800	827
12	451	479	840	1220	956	850	1590	37	1620	734	800	342
13	488	391	35	419	636	901	1580	64	1640	683	800	258
14	543	593	604	272	1020	933	1750	1230	1730	552	805	514
15	602	484	553	226	1120	798	1860	1220	1730	761	805	268
16	548	426	714	36	883	826	1850	1310	1420	570	805	271
17	567	957	761	148	1110	820	1810	1370	1430	581	824	331
18	693	1260	165	385	604	758	1780	29	1460	32	844	475
19	251	1610	594	1110	715	826	1730	28	1510	32	825	560
20	184	708	957	1320	887	887	1700	944	1460	32	818	544
21	165	697	629	748	869	840	1650	1630	1380	32	854	777
22	518	668	629	939	1180	813	1480	1600	1210	217	877	854
23	434	669	545	36	1270	866	1240	853	1230	604	841	781
24	165	491	579	979	1630	857	1230	36	1150	1130	1180	700
25	313	967	555	475	1650	1110	1460	34	1150	1130	1130	1130
26	513	679	915	556	1650	1050	1590	816	1180	623	1220	719
27	341	932	1330	582	1310	1020	1640	1170	1010	822	1090	734
28	814	699	1200	518	329	981	1660	1640	1090	1050	830	742
29	438	550	1170	429	---	1440	1670	1630	975	1080	821	481
30	782	611	1260	356	---	1580	1680	1550	1010	741	1320	649
31	473	---	1180	984	---	1550	---	34	---	740	1320	---
TOTAL	15245	20718	19358	23918	28107	28133	45651	30683	35535	20215	27386	23117
MEAN	492	691	624	772	1004	908	1522	990	1185	652	883	771
MAX	814	1610	1330	1570	1650	1580	1860	1640	1840	1130	1320	1290
MIN	29	378	35	36	329	329	821	28	34	32	736	258
AC-FT	30240	41090	38400	47440	55750	55800	90550	60860	70480	40100	54320	45850

CAL YR 1976 TOTAL 306969 MEAN 839 MAX 1950 MIN 21 AC-FT 608900
WTR YR 1977 TOTAL 318066 MEAN 871 MAX 1860 MIN 28 AC-FT 630900

12101500 PUYALLUP RIVER AT PUYALLUP, WA

LOCATION.--Lat 47°12'31", long 122°19'33", in SE¼NW¼ sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014 on left bank 0.8 mi (1.3 km) upstream from bridge at Clark Creek, 2.0 mi (3.2 km) northwest of Puyallup City Hall, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--948 mi^2 (2,455 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Dec. 3, 1919, at sites 1.2 mi (1.9 km) upstream and 900 ft (274 m) upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft (152 m) upstream at datum 9.61 ft (2.929 m) higher than present datum.

REMARKS.--Water-discharge records good. All diverted water returned to river above gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (see sta 12101000). Flood flow regulated by Mud Mountain Lake (see sta 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt above station.

Since 1912 the city of Tacoma pipeline diversion from Green River has spilled as much as 125 ft^3/s (3.48 m^3/s) daily, and since 1957 an average of about 25 ft^3/s (0.71 m^3/s) per month into Puyallup River 0.5 mi (0.8 km) east of McMillin. Monthly mean discharge, in cubic feet per second, for the current year is as follows:

October.......	20.2	January.......	16.9	April.......	19.6	July.......	1.82
November......	13.0	February......	8.14	May..........	1.02	August.....	1.60
December......	19.1	March.........	12.0	June.........	12.5	September..	4.95

AVERAGE DISCHARGE.--63 years, 3,388 ft^3/s (95.95 m^3/s) 2,455,000 acre-ft/yr (3,030 hm^3) adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft^3/s (1,610 m^3/s) Dec. 10, 1933, elevation, 31.0 ft (9.45 m), present datum; minimum, 306 ft^3/s (8.67 m^3/s) Sept. 25, 1955, elevation, 8.23 ft (2.509 m); minimum daily, 400 ft^3/s (11.3 m^3/s) Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,560 ft^3/s (186 m^3/s) June 8, elevation, 13.51 ft (4.118 m); minimum, 508 ft^3/s (14.4 m^3/s) Oct. 20, 23, elevation, 8.24 ft (2.512 m); minimum daily, 662 ft^3/s (18.7 m^3/s) Oct. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1660	2350	1520	1970	1600	1680	3130	3700	4170	2320	1980	2650
2	1590	2640	1220	1790	1300	1760	2640	3730	4710	2290	1970	2360
3	1620	1960	840	2530	1920	2150	2570	3960	3010	2000	2050	2400
4	1200	1510	1110	1500	1320	2280	2190	3800	3490	1850	2040	3030
5	1270	1400	1110	1790	1550	1720	2680	3500	3620	1670	2110	3290
6	1220	1760	960	1470	1590	1890	3560	3230	5030	1500	2060	2300
7	1220	1140	936	1790	1740	2050	4040	3120	6320	1510	1970	2620
8	1310	1320	1280	2350	1600	2580	4650	3440	5980	1500	2000	2370
9	1460	1330	1170	2310	1710	3290	4190	2440	4730	1340	2000	2290
10	1430	1380	1430	2210	1850	3230	3600	1640	4000	1390	2040	2260
11	1030	1300	1310	1930	2210	2080	3350	1770	3890	1820	2070	1900
12	1230	1190	1640	1960	2140	2480	3210	1520	3520	2000	2210	1390
13	1210	1040	864	1260	2020	2600	3240	1380	3480	1930	2240	1240
14	1240	1090	1250	1060	2160	2500	3310	2680	3570	1620	2100	1400
15	1240	1340	1320	984	2090	2400	3340	2830	3590	1870	2130	1200
16	1180	1080	1550	902	1890	2190	3650	2920	3190	1680	2090	1020
17	1150	2610	1520	1650	1950	2170	3500	3220	3190	1770	2140	960
18	1320	3380	984	3140	1540	1990	3310	1960	3370	1530	2200	1160
19	840	3120	1280	4660	1460	2260	3150	1690	3500	1670	2160	1350
20	732	2090	1730	3620	1790	2040	3030	2360	3250	1650	2240	1710
21	662	1760	1340	2370	1660	2070	2950	3380	3110	1810	2370	2330
22	1060	1720	1300	2280	1990	2010	2800	3510	2900	2100	2240	2220
23	1020	1740	1650	1240	2050	2200	2950	2690	2880	1870	2020	2180
24	683	1410	1530	1920	2440	2260	3400	2040	2600	2420	3260	2400
25	1190	2000	1530	1480	2460	2370	4430	1740	2830	2550	2770	2760
26	1830	1760	3460	1470	2470	2350	4690	2850	2760	1970	3100	2270
27	1290	1680	4190	1460	2230	3320	4020	2800	2440	2210	2960	2000
28	1520	1600	3380	1350	1470	2780	3650	3360	2510	2490	2140	1900
29	1410	1340	2950	1110	---	3010	3720	3410	2670	2340	2530	1890
30	1660	1260	2750	1120	---	2980	3660	3270	2410	1880	4000	2100
31	1400	---	2350	1730	---	2870	---	2240	---	1920	3290	---
TOTAL	38957	51300	51544	58336	52200	73840	102610	85960	106680	58630	72560	61358
MEAN	1257	1710	1663	1882	1864	2382	3420	2773	3556	1891	2341	2045
MAX	1830	3380	4190	4660	2470	3320	4690	3960	6320	2550	4000	3290
MIN	662	1040	840	984	1300	1680	2190	1380	2410	1340	1970	960
AC-FT	77270	101800	102200	115700	103500	146500	203500	170500	211600	116300	143900	121700
†	+554	-2,782	+2,278	-3,599	-23,816	-5,046	-3,573	+20,054	+17,542	-479	+101	-780
MEAN‡	1,265	1,665	1,699	1,823	1,435	2,301	3,360	3,099	3,851	1,883	2,341	2,032
AC-FT‡	77,820	99,020	104,500	112,100	79,680	141,500	199,900	190,600	229,100	115,800	144,000	120,900

CAL YR 1976: TOTAL 1,129,591 MEAN 3,086 MAX 23,000 MIN 662 AC-FT 2,241,000
DO.....: MEAN‡ 3,117 AC-FT‡ 2,262,000
WTR YR 1977: TOTAL 813,975 MEAN 2,230 MAX 6,320 MIN 662 AC-FT 1,615,000
DO.....: MEAN‡ 2,231 AC-FT‡ 1,615,000

† Change in contents, in acre-feet, in Lake Tapps, from information by Puget Sound Power & Light Co.
‡ Adjusted for change in contents in Lake Tapps.

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at Clark Creek bridge 0.8 mi (1.3 km) downstream from gage.

PERIOD OF RECORD.--Water years 1959-68, 1971-72, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1959 to September 1961, August 1965 to September 1966.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished for the bimonthly water-quality samples listed below by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	HARD-NESS (CA,MG) (MG/L)
OCT									
13...	1310	1470	80	7.6	12.3	25	15	10.4	25
27...	1350	1920	85	7.6	11.3	55	5	11.0	24
NOV									
10...	1340	1520	90	7.8	10.1	21	4	11.0	25
18...	1210	3660	73	7.3	8.0	70	55	11.3	20
DEC									
08...	1315	1070	85	7.5	7.7	42	8	11.0	30
22...	1220	1500	111	7.6	6.3	25	4	12.6	35
JAN									
13...	1345	1510	95	7.5	4.7	25	7	13.0	27
26...	1245	1900	80	7.4	4.3	33	5	12.8	25
FEB									
03...	1200	2480	85	7.3	5.0	21	3	12.4	25
23...	1300	2480	83	7.6	7.4	33	4	12.3	26
MAR									
16...	1205	2620	100	7.6	6.7	29	3	12.1	20
31...	1430	2900	75	7.6	7.0	48	5	11.3	25
APR									
13...	1315	3290	70	7.4	10.4	29	5	11.5	20
27...	1415	3980	60	7.4	11.6	25	6	11.4	20
MAY									
11...	1340	1740	95	7.0	9.2	42	4	11.7	23
25...	1215	1750	75	7.6	11.3	33	3	11.6	24
JUN									
15...	1350	3660	65	7.5	13.0	42	15	10.3	19
29...	1235	2510	66	7.2	15.5	65	80	10.3	19
JUL									
07...	1340	1500	74	7.2	16.4	33	15	10.5	24
20...	1400	1700	77	7.5	15.6	65	75	10.6	23
AUG									
03...	1310	2080	65	6.8	10.6	50	200	10.0	22
17...	1345	2110	62	7.1	10.4	120	140	10.1	19
SEP									
01...	0750	2810	57	6.5	13.0	--	60	10.0	21
01...	1330	2530	56	6.7	15.1	--	60	10.2	--
08...	1420	2370	70	7.6	15.5	80	60	10.5	20
21...	1500	2740	70	7.2	13.6	50	40	10.5	24

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)
OCT									
13...	0	6.1	2.3	4.6	1.0	34	0	28	1.6
27...	7	6.8	1.8	4.7	1.1	21	0	17	.8
NOV									
10...	0	7.2	1.7	4.9	1.0	34	0	28	.9
18...	0	5.6	1.4	2.9	.9	24	0	20	1.9
DEC									
08...	0	7.9	2.6	4.3	1.1	39	0	32	2.0
22...	4	9.5	2.6	5.1	1.0	38	0	31	1.5
JAN									
13...	3	7.7	2.0	4.2	1.0	29	0	24	1.5
26...	1	7.0	1.8	3.7	.7	29	0	24	1.0
FEB									
03...	4	7.1	1.8	3.6	.8	26	0	21	2.1
23...	3	7.3	1.8	4.0	.8	28	0	23	1.1
MAR									
16...	5	7.9	2.1	3.9	.9	28	0	23	1.1
31...	2	6.9	1.9	3.9	.9	28	0	23	1.1
APR									
13...	1	5.7	1.5	3.2	.7	24	0	20	1.5
27...	1	5.9	1.3	2.9	.7	23	0	19	1.5
MAY									
11...	3	6.4	1.7	3.0	.6	24	0	20	3.0
25...	2	6.4	1.9	3.5	.8	26	0	21	1.0
JUN									
15...	2	5.4	1.4	3.1	.7	21	0	17	1.1
29...	3	5.0	1.7	3.2	.7	20	0	16	2.0
JUL									
07...	0	6.6	1.8	3.8	.8	29	0	24	2.9
20...	1	6.0	1.9	3.9	.8	26	0	21	1.3
AUG									
03...	3	6.6	1.3	3.0	.9	23	0	19	5.8
17...	3	5.2	1.4	3.0	.7	19	0	16	2.4
SEP									
01...	1	6.0	1.4	3.2	.8	24	0	20	12
01...	--	--	--	--	--	26	--	21	8.3
08...	0	5.1	1.7	3.3	.8	24	--	20	1.0
21...	4	6.7	1.7	3.6	1.0	24	0	20	2.4

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L)
OCT								
13...	5.1	1.8	.01	.01	.11	.14	.10	.01
27...	13	2.1	.06	.01	.08	.24	.04	.01
NOV								
10...	6.5	1.6	.03	.01	.07	.12	.05	.01
18...	6.9	2.2	.16	.03	.12	.46	.20	.00
DEC								
08...	5.5	3.1	.20	.01	.20	.46	.07	.01
22...	10	3.6	.22	.01	.14	.39	.04	.01
JAN								
13...	10	2.5	.21	.00	.12	.18	.04	.01
26...	6.3	2.5	.17	.01	.10	.28	.03	.00
FEB								
03...	8.5	3.1	.18	.01	.12	.24	.03	.01
23...	6.9	2.1	.10	.01	.09	.29	.03	.00
MAR								
16...	8.0	3.1	.40	.01	.12	.44	.04	.01
31...	9.6	2.3	.26	.01	.06	.14	.03	.01
APR								
13...	6.5	1.9	.15	.01	.07	.18	.03	.00
27...	8.5	1.8	.07	.01	.06	.12	.04	.00
MAY								
11...	7.4	2.0	.14	.01	.06	.14	.04	.01
25...	6.1	2.5	.09	.01	.07	.14	.03	.01
JUN								
15...	5.2	1.7	.05	.02	.23	.23	.00	.01
29...	6.8	2.0	.09	.00	.20	.24	.31	.01
JUL								
07...	5.8	2.2	.23	.01	.12	.12	.06	.01
20...	7.3	2.3	.07	.01	.08	.16	.21	.02
AUG								
03...	6.7	2.1	.06	.01	.17	.24	.41	.02
17...	5.9	1.7	.05	.01	.13	.24	.46	.02
SEP								
01...	4.7	1.8	--	--	.01	.21	.15	.02
01...	--	--	--	--	.07	.20	.15	.02
08...	3.8	2.1	.05	.01	.05	.21	.19	.02
21...	4.5	2.1	.08	.01	.16	.19	.19	.02

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM ,TUR-MF (COL./100 ML)	HARD-NESS (CA,MG) (MG/L)
SEP											
01...	0750	2810	46	6.5	13.0	60	10.0	96	6600	300	21
01...	1035	2750	54	6.7	14.3	--	10.1	98	--	--	--
01...	1200	2590	58	6.7	14.5	--	10.2	101	--	--	--
01...	1330	2530	56	6.7	15.1	60	10.2	101	4000	230	--
01...	1605	2490	57	6.7	16.4	--	9.9	100	--	--	--
01...	1750	2480	58	6.9	16.6	--	9.9	101	--	--	--
01...	1940	2440	58	6.8	16.0	60	9.6	97	8500	250	--
01...	2105	2420	58	7.0	15.8	--	9.5	95	--	--	--
01...	2220	2400	59	7.1	15.2	--	9.5	96	--	--	--
01...	2330	2390	58	7.1	15.0	--	9.6	95	--	--	--
02...	0050	2380	58	7.0	14.8	--	9.8	96	--	--	--
02...	0205	2370	59	7.0	14.8	--	9.9	97	11000	310	--
02...	0330	2380	60	7.0	14.6	--	9.6	96	--	--	--
02...	0500	2400	60	7.1	14.6	--	--	--	--	--	--
02...	0620	2400	61	6.8	14.6	--	9.6	96	--	--	--
02...	0740	2390	60	7.1	14.4	--	9.6	96	--	--	--

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
SEP										
01...	1	6.0	1.4	3.2	.8	26	0	21	12	6.7
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	26	0	21	6.3	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SUS-PENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L)
SEP										
01...	1.8	.1	13	43	72	.12	.01	.21	.15	.02
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	65	.10	.07	.20	.15	.02
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

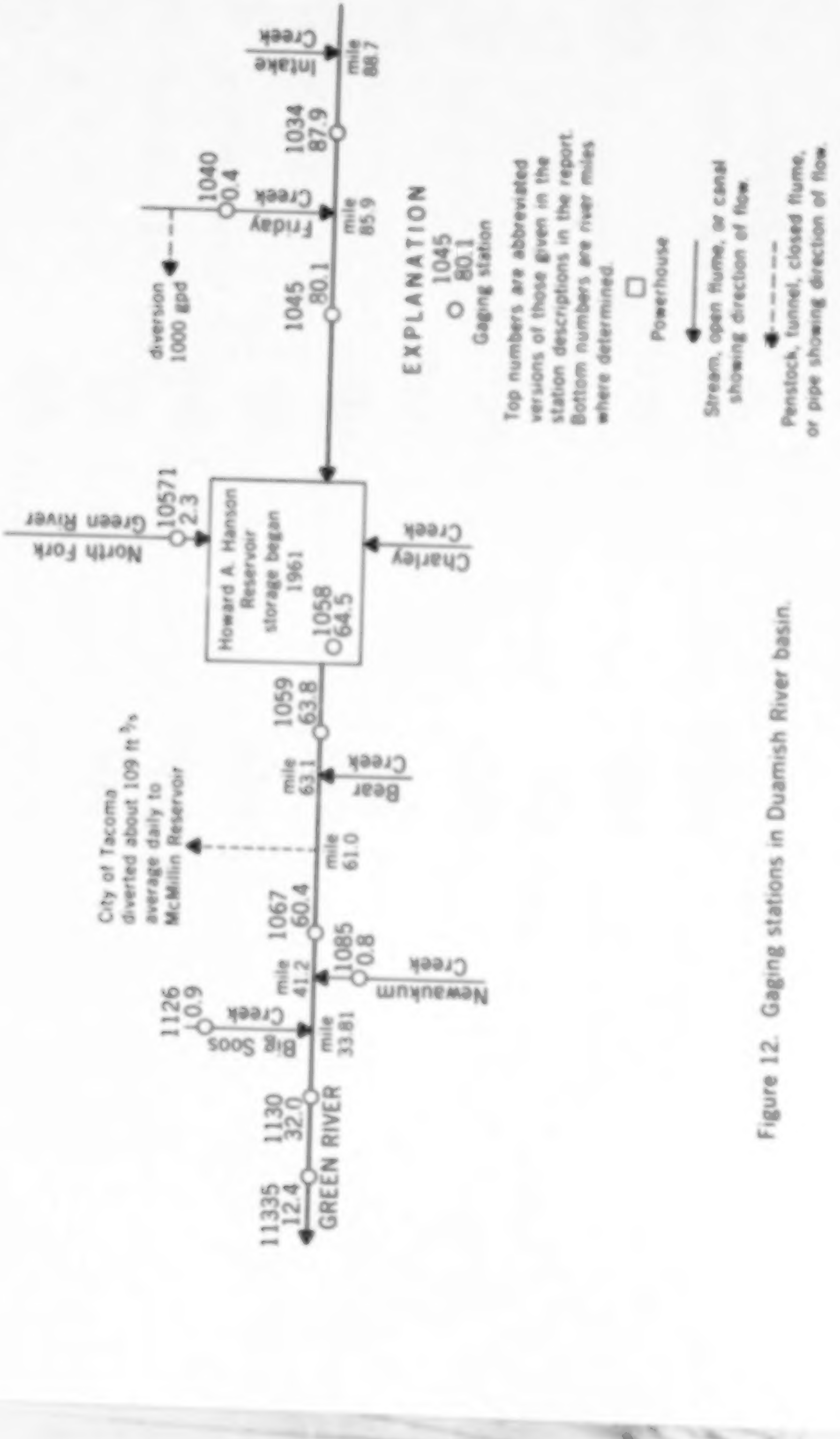
11335
12.4
GREEN RIVER
1130
32.0
mile
33.81
Big Soos Creek
1126
0.9
mile
41.2
Newaukum Creek
1085
0.8
1067
60.4
mile
61.0
City of Tacoma diverted about 109 ft³/s average daily to McMillin Reservoir
mile
63.1
Bear Creek
1059
63.8
Howard A. Hanson Reservoir storage began 1961
1058
64.5
North Fork Green River
10571
2.3
Charley Creek
1045
80.1
mile
85.9
Friday Creek
1040
0.4
diversion 1000 gpd
1034
87.9
mile
88.7
Intake Creek
EXPLANATION
1045
80.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 12. Gaging stations in Duamish River basin.

12103400 GREEN RIVER BELOW INTAKE CREEK, NEAR LESTER, WA

LOCATION.--Lat 47°12'44", long 121°25'13", in NW¼ sec.21, T.20 N., R.11 E., King County, Hydrologic Unit 17110013, Snoqualmie National Forest, on left bank 0.8 mi (1.3 km) downstream from Intake Creek, 3.3 mi (5.3 km) east of Lester, and at mile 87.9 (141 km).

DRAINAGE AREA.--34.8 mi² (90.1 km²).

PERIOD OF RECORD.--October 1966 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,800 ft (549 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Nov. 9 to Dec. 1 and period of shifting control Dec. 7 to 26, which are fair.. No regulation or diversion control above station.

AVERAGE DISCHARGE.--11 years, 128 ft³/s (3.625 m³/s), 49.95 in/yr (1,269 mm/yr), 92,740 acre-ft/yr (114 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,690 ft³/s (133 m³/s) Dec. 1, 1975, gage height, 6.00 ft (1.829 m), from rating curve extended above 2,000 ft³/s (56.6 m³/s); maximum gage height, 6.05 ft (1.844 m) Dec. 23, 1967; minimum discharge, 9.5 ft³/s (0.27 m³/s) Sept. 22, 1971; minimum gage height, 1.11 ft (0.338 m) Sept. 27-29, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 7	2300	*576	16.3	*3.31	1.009

Minimum discharge, 12 ft³/s (0.34 m³/s) Aug. 20, 21, 22, 23, gage height, 1.40 ft (0.427 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	60	43	96	84	81	106	210	125	41	20	30
2	18	52	41	88	59	76	108	213	139	40	19	36
3	20	47	40	81	56	74	109	219	139	38	18	36
4	19	45	38	76	53	69	134	193	151	38	18	36
5	19	42	38	69	58	67	196	160	151	37	20	34
6	18	42	38	66	65	65	310	166	159	38	20	30
7	18	41	55	67	66	78	456	134	156	36	19	29
8	18	40	55	58	66	77	510	125	144	35	18	29
9	18	39	55	56	68	85	338	121	125	34	16	28
10	21	33	53	56	53	77	263	136	112	32	16	27
11	20	33	52	52	98	72	207	132	102	31	16	26
12	19	32	52	50	83	70	185	125	96	31	15	25
13	18	33	51	49	100	66	170	119	88	31	14	24
14	17	28	50	48	90	62	161	117	81	30	14	23
15	17	25	56	57	83	59	149	110	77	29	14	22
16	17	50	53	61	77	58	144	106	72	28	14	22
17	18	60	51	144	77	53	132	102	69	28	13	21
18	18	100	56	375	76	55	125	102	66	28	13	21
19	18	82	56	415	74	56	116	102	62	27	13	23
20	16	70	52	264	74	55	108	100	61	25	13	28
21	18	62	50	170	74	59	104	104	58	24	13	53
22	18	55	49	161	72	74	114	106	56	24	13	62
23	19	52	50	136	65	90	169	112	53	23	14	68
24	20	58	47	117	68	85	258	110	52	23	21	53
25	46	70	52	104	66	77	375	110	49	22	21	58
26	43	66	144	96	61	90	355	110	48	22	42	55
27	33	97	234	86	66	161	276	106	44	21	38	58
28	32	93	185	78	70	119	237	108	45	22	38	58
29	32	69	149	74	---	96	231	108	42	24	38	58
30	31	68	123	68	---	86	219	106	42	22	59	56
31	46	---	108	66	---	88	---	112	---	21	45	---
TOTAL	698	1536	2167	3401	1871	2376	6341	3971	2662	905	655	1072
MEAN	22.5	51.2	69.9	110	66.8	76.6	211	128	88.7	29.2	21.1	35.7
MAX	46	100	234	415	100	161	510	219	159	41	59	58
MIN	17	28	38	48	46	53	104	100	42	21	13	21
CFSM	.65	1.47	2.01	3.16	1.92	2.20	6.06	3.68	2.55	.84	.61	1.03
IN.	.75	1.64	2.32	3.64	2.00	2.54	6.78	4.24	2.85	.97	.70	1.15
AC-FT	1380	3050	4300	6750	3710	4710	12580	7880	5280	1800	1300	2130

CAL YR 1976 TOTAL 44095 MEAN 120 MAX 1040 MIN 15 CFSM 3.45 IN 47.16 AC-FT 87460
WTR YR 1977 TOTAL 27655 MEAN 75.8 MAX 510 MIN 13 CFSM 2.18 IN 29.56 AC-FT 54850

12104000 FRIDAY CREEK NEAR LESTER, WA

LOCATION.--Lat 47°15'17", long 121°27'22", in SE¼NW¼ sec.18, T.20 N., R.11 E., King County, Hydrologic Unit 17110013, on left bank 0.4 mi (0.6 km) upstream from mouth and 1.9 mi (3.1 km) northeast of Lester.

DRAINAGE AREA.--4.67 mi^2 (12.10 km^2).

PERIOD OF RECORD.--October 1945 to September 1977 (discontinued).

REVISED RECORDS.--WSP 1716: 1957(M), 1959(M). WSP 1932: 1949-50, drainage area.

GAGE.--Water-stage recorder. Concrete control Aug. 9, 1951, to Nov. 22, 1959. Altitude of gage is 1,760 ft (536 m), from topographic map.

REMARKS.--Records good. Small diversion above gage of about 1,000 gpd (0.044 l/s) for domestic use. No regulation.

AVERAGE DISCHARGE.--32 years, 27.1 ft^3/s (0.767 m^3/s), 78.80 in/yr (2,002 mm/yr), 19,630 acre-ft/yr (24.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,660 ft^3/s (47.0 m^3/s) Dec. 1, 1975, gage height, 5.50 ft (1.676 m) from floodmarks, from rating curve extended above 230 ft^3/s (6.51 m^3/s); minimum, 1.2 ft^3/s (0.034 m^3/s) Sept. 6, 1958; minimum gage height, 0..70 ft (0.213 m) Aug. 17, 18, 19, 20, 21, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 120 ft^3/s (3.40 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*120	3.40	*2.57	0.783

Minimum discharge, 2.2 ft^3/s (0.062 m^3/s) Aug. 17, 18, 19, 20, 21, gage height, 0.70 ft (0.213).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	30	12	21	10	17	24	36	22	4.7	2.8	5.7
2	4.2	23	11	18	9.5	15	22	34	23	4.7	2.7	5.3
3	4.4	19	9.8	17	8.8	15	22	33	22	4.8	2.7	7.8
4	3.9	15	9.0	15	8.1	13	20	30	27	4.8	2.7	11
5	3.8	12	8.3	14	7.8	13	30	28	25	4.7	2.8	8.3
6	3.8	11	12	12	7.4	13	48	27	24	5.3	2.6	6.8
7	3.5	9.8	36	11	7.2	13	44	27	22	4.4	2.5	6.1
8	3.5	9.0	34	10	7.0	15	68	26	20	4.2	2.5	6.1
9	3.5	8.3	30	9.0	7.6	16	58	25	18	4.1	2.5	5.1
10	4.7	7.4	27	8.6	14	14	48	29	16	4.0	2.5	4.8
11	4.4	6.8	24	8.3	22	12	37	29	16	4.0	2.4	4.4
12	4.0	6.5	22	8.3	33	11	36	27	13	4.1	2.4	4.1
13	3.8	6.1	21	7.6	31	10	36	25	12	4.0	2.4	4.0
14	3.8	5.9	19	7.4	25	9.8	33	25	11	3.9	2.3	3.9
15	3.8	7.6	20	16	22	9.3	33	24	10	3.7	2.3	3.7
16	3.7	17	21	22	19	8.8	33	23	9.5	3.6	2.3	3.6
17	3.7	27	21	44	19	8.3	30	23	8.6	4.2	2.3	3.6
18	3.7	28	24	88	19	8.3	28	23	7.6	3.7	2.2	3.5
19	3.7	22	22	69	17	8.8	24	22	7.4	3.5	2.2	3.6
20	3.7	19	20	46	16	9.8	22	22	7.2	3.4	2.2	4.8
21	3.7	17	19	35	15	16	23	21	7.2	3.2	2.3	23
22	3.7	14	17	29	15	21	32	20	7.0	3.2	2.3	13
23	3.7	12	10	26	13	22	50	20	6.5	3.1	2.5	14
24	4.4	15	16	21	12	17	64	20	5.7	3.0	3.5	17
25	28	27	22	19	12	15	68	19	6.1	3.0	3.6	20
26	24	22	54	17	11	26	63	19	5.7	2.9	8.1	18
27	14	19	73	15	14	30	51	18	5.6	2.9	5.3	15
28	12	17	48	13	10	27	46	18	5.3	2.8	5.4	14
29	10	15	37	12	---	20	43	19	5.0	3.0	7.6	25
30	8.6	13	30	11	---	18	39	18	4.8	2.9	12	17
31	22	---	25	11	---	19	---	20	---	2.8	7.4	---
TOTAL	211.6	460.4	762.1	658.2	420.4	479.1	1193	750	378.2	116.6	109.3	273.4
MEAN	6.83	15.3	24.6	21.2	15.0	15.5	39.8	24.2	12.6	3.76	3.53	9.11
MAX	28	30	73	88	33	30	68	36	27	5.3	12	23
MIN	3.5	5.9	8.3	7.4	7.0	8.3	22	18	4.8	2.8	2.2	3.5
CFSM	1.46	3.28	5.27	4.54	3.21	3.32	8.52	5.18	2.70	.81	.76	1.95
IN.	1.69	3.67	6.07	5.24	3.35	3.82	9.50	5.97	3.01	.93	.87	2.18
AC-FT	420	913	1510	1310	834	950	2370	1490	750	231	217	542

CAL YR 1976 TOTAL 8922.9 MEAN 24.4 MAX 260 MIN 3.5 CFSM 5.23 IN 71.08 AC-FT 17700
WTR YR 1977 TOTAL 5812.3 MEAN 15.9 MAX 88 MIN 2.2 CFSM 3.41 IN 46.29 AC-FT 11530

12104500 GREEN RIVER NEAR LESTER, WA

LOCATION.--Lat 47°12'28", long 121°33'07", in NE¼SE¼ sec.20, T.20 N., R.10 E., King County, Hydrologic Unit 17110013, on left bank 0.4 mi (0.6 km) upstream from Champion Creek, 1.2 mi (1.9 km) downstream from McCain Creek, 2.9 mi (4.7 km) west of Lester, and at mile 80.1 (128.9 km).

DRAINAGE AREA.--96.2 mi^2 (249.2 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1947(M). WSP 1316: 1948(M). WSP 1932: 1960, drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft (451 m), from river-profile map. Prior to Nov. 22, 1959, water-stage recorder at site 300 ft (91 m) upstream at different datum (gage destroyed by flood of Nov. 22, 1959), Dec. 28, 1959, to Sept. 21, 1960, nonrecording gage at site 400 ft (122 m) downstream at different datum.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--32 years, 408 ft^3/s (11.55 m^3/s), 57.60 in/yr (1,463 mm/yr), 295,600 acre-ft/yr (364 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 22,000 ft^3/s (623 m^3/s) Nov. 22, 1959, gage height, 12.41 ft (3.783 m), from floodmarks, present site and datum, on basis of slope-area measurement of peak flow; minimum, 22 ft^3/s (0.62 m^3/s) Nov. 20, 1952, Sept. 27, 1967, part or all of each day Oct. 18-20, 23-27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft^3/s (56.6 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1800	*1,840	52.1	*4.54	1.384

Minimum discharge, 35 ft^3/s (0.99 m^3/s) Aug. 17, 18, 19, 20, 21, gage height, 1.24 ft (0.378 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	279	148	284	168	254	430	536	307	83	47	114
2	60	216	136	246	162	238	415	520	345	83	46	99
3	61	175	129	223	153	234	380	520	345	83	45	106
4	60	156	121	198	142	216	455	475	395	81	44	116
5	58	142	114	175	134	205	613	415	395	79	45	119
6	57	126	114	165	126	212	840	365	390	83	46	101
7	56	118	216	159	121	219	1120	340	370	76	47	91
8	54	110	246	151	116	246	1240	320	330	73	43	90
9	54	106	250	142	116	279	877	311	284	72	42	83
10	56	97	227	134	136	254	663	345	250	70	41	78
11	58	93	216	129	198	231	563	365	227	69	40	73
12	56	88	198	126	311	223	510	325	208	70	39	70
13	54	84	191	121	405	205	505	307	191	68	38	66
14	52	83	181	119	335	191	460	302	178	65	38	65
15	51	93	184	134	279	178	430	284	168	62	38	63
16	50	142	194	178	246	175	440	275	162	61	37	62
17	49	246	194	525	238	168	405	263	153	63	37	61
18	48	395	234	1250	242	168	370	263	145	62	36	58
19	47	288	219	1300	227	178	330	254	136	58	36	60
20	46	234	205	804	219	178	297	246	131	57	36	69
21	46	194	191	607	212	205	284	250	126	55	38	184
22	46	175	181	485	205	263	320	246	121	54	38	165
23	46	162	198	400	191	325	525	258	114	52	40	162
24	47	159	178	340	178	297	768	258	108	51	55	188
25	114	242	201	297	175	263	968	246	103	51	55	208
26	175	223	635	263	168	316	898	246	99	51	101	201
27	121	191	1100	234	181	613	720	234	95	50	97	184
28	103	175	732	212	234	470	624	238	91	51	84	178
29	99	165	541	196	---	375	607	250	88	55	103	175
30	90	156	425	178	---	320	563	238	86	50	165	181
31	148	---	345	171	---	330	---	258	---	48	145	---
TOTAL	2122	5111	8444	9944	5618	8029	17620	9753	6141	1986	1742	3470
MEAN	68.5	170	272	321	201	259	587	315	205	64.1	56.2	116
MAX	175	395	1100	1300	405	613	1240	536	395	83	165	208
MIN	46	83	114	119	116	168	284	234	86	48	36	58
CFSM	.71	1.77	2.83	3.34	2.09	2.69	6.10	3.27	2.13	.67	.58	1.21
IN.	.82	1.98	3.27	3.85	2.17	3.10	6.81	3.77	2.37	.77	.67	1.34
AC-FT	4210	10140	16750	19720	11140	15930	34950	19350	12180	3940	3460	6880

CAL YR 1976 TOTAL 136108 MEAN 372 MAX 3860 MIN 46 CFSM 3.87 IN 52.63 AC-FT 270000
WTR YR 1977 TOTAL 79980 MEAN 219 MAX 1300 MIN 36 CFSM 2.28 IN 30.93 AC-FT 158600

12105710 NORTH FORK GREEN RIVER NEAR LEMOLO, WA

LOCATION.--Lat 47°18'21", long 121°46'20", near line between SW¼ and SE¼ sec.15, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on left bank 1.8 mi (2.9 km) northeast of Lemolo siding, 5.5 mi (8.8 km) east of Palmer, and at mile 2.3 (3.7 km).

DRAINAGE AREA.--16.7 mi² (43.3 km²).

PERIOD OF RECORD.--June 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,250 ft (381 m), from topographic map.

REMARKS.--Records poor. No regulation or diversion. Considerable water goes underground a short distance above the gage and, at times during dry summers, the streambed at the gage may become completely dry.

AVERAGE DISCHARGE.--12 years, 88.9 ft³/s (2.518 m³/s) 72.29 in/yr (1,836 mm/yr) 64,410 acre-ft/yr (79.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft³/s (56.9 m³/s) Dec. 2, 1975, gage height, 8.29 ft (2.527 m); no flow Aug. 8, 9, 18, Sept. 5-13, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 28, 1965 reached a stage of 9.50 ft (2.896 m) from floodmarks, discharge, 2,370 ft³/s (67.1 m³/s) by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	unknown	unknown		unknown	

Maximum daily discharge, 270 ft³/s (7.65 m³/s) Jan. 18; minimum discharge, 3.6 ft³/s (0.10 m³/s) Aug. 17, 18, gage height, 3.50 ft (1.067 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	76	42	73	37	61	165	101	101	12	5.8	23
2	11	56	38	68	36	63	155	100	106	12	5.4	19
3	19	45	34	61	34	68	153	110	96	12	5.2	30
4	13	38	34	54	33	64	165	111	115	12	5.2	45
5	12	33	32	47	32	63	178	106	100	12	5.1	40
6	11	29	36	43	31	67	202	103	88	13	4.9	31
7	10	26	67	41	30	70	235	101	80	11	4.7	26
8	9.9	24	64	39	29	71	225	103	74	11	4.6	25
9	9.5	23	56	38	29	77	183	101	70	10	4.6	20
10	13	19	54	37	47	73	174	104	64	10	4.4	18
11	14	17	49	37	66	71	167	95	57	10	4.3	17
12	13	16	46	46	88	74	155	88	54	11	4.0	16
13	11	16	45	45	88	71	153	85	49	11	4.0	15
14	10	15	42	42	73	71	149	92	45	9.6	4.0	14
15	10	23	43	59	66	73	151	90	41	8.8	4.0	14
16	9.5	56	41	84	70	70	153	93	38	8.3	3.9	13
17	8.6	90	38	150	74	68	140	101	33	11	3.7	13
18	8.1	66	49	270	74	70	132	110	29	10	3.7	12
19	7.9	45	43	190	67	77	120	98	26	8.6	3.9	14
20	7.7	39	41	140	64	79	113	92	25	8.1	3.9	26
21	7.6	36	38	100	59	87	113	93	25	7.7	4.0	60
22	7.6	32	38	80	59	98	136	84	24	7.2	4.1	42
23	7.6	28	59	65	56	115	144	90	19	7.0	5.1	46
24	8.0	25	49	55	54	111	160	98	18	7.0	13	59
25	44	79	60	46	52	108	153	87	16	6.7	13	52
26	60	68	180	44	46	136	144	88	14	6.5	33	45
27	34	61	170	42	59	210	134	87	14	6.3	21	40
28	33	56	130	40	63	176	126	90	14	6.5	25	37
29	33	52	105	39	---	153	120	92	13	6.5	30	40
30	25	46	92	38	---	140	110	85	12	6.1	50	40
31	53	---	82	38	---	144	---	96	---	6.0	32	---
TOTAL	532.0	1235	1897	2151	1516	2879	4608	2974	1460	284.9	319.5	892
MEAN	17.2	41.2	61.2	69.4	54.1	92.9	154	95.9	48.7	9.19	10.3	29.7
MAX	60	90	180	270	88	210	235	111	115	13	50	60
MIN	7.6	15	32	37	29	61	110	84	12	6.0	3.7	12
CFSM	1.03	2.47	3.67	4.16	3.24	5.56	9.22	5.74	2.92	.55	.62	1.78
IN.	1.18	2.75	4.23	4.79	3.38	6.41	10.26	6.62	3.25	.63	.71	1.99
AC-FT	1060	2450	3760	4270	3010	5710	9140	5900	2900	565	634	1770

CAL YR 1976 TOTAL 24681.2 MEAN 67.4 MAX 1300 MIN 7.6 CFSM 4.04 IN 54.98 AC-FT 48960
WTR YR 1977 TOTAL 20748.4 MEAN 56.8 MAX 270 MIN 3.7 CFSM 3.40 IN 46.22 AC-FT 41150

NOTE.--No gage-height record Jan. 17-31.

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE¼SE¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure just upstream from Howard A. Hanson Dam on Green River, 1.4 mi (2.3 km) upstream from Bear Creek , 5.1 mi (8.2 km) southeast of Palmer, and at mile 64.5 (103.8 km).

DRAINAGE AREA.--220 mi² (570 km²) approximately.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Nonrecording gage. Datum of gage is at mean sea level. Supplementary long-distance water-stage recorder on right bank at same datum.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity 105,650 acre-ft (310 hm³) between elevations 1,035 ft (315.5 m), invert of outlet tunnel, and 1,206 ft (367.6 m), top of spillway gates. Storage is not retained but is dissipated as soon after a flood as is possible without creating damaging flows downstream in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Record of reservoir elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 61,325 acre-ft (75.6 hm³) Dec. 5, 1975, elevation, 1,175.8 ft (358.38 m); minimum observed, 34 acre-ft (41,900 hm³) Nov. 2, 1962, elevation, 1,037.6 ft (316.26 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 26,198 acre-ft (32.3 hm³) June 6, elevation, 1,141.7 ft (347.99 m); minimum observed, 348 acre-ft (0.429 hm³) Jan. 20, elevation, 1,051.6 (320.53 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on photogrametric maps by Fairchild Aerial Surveys in 1961)

1,045	153	1,080	2,800	1,140	24,887
1,050	289	1,090	4,550	1,150	33,301
1,055	493	1,100	6,893	1,160	43,092
1,060	770	1,110	9,715	1,170	54,326
1,065	1,130	1,120	13,386	1,180	66,591
1,070	1,590	1,130	18,362		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6320	2510	578	1413	661	1442	1140	4682	25806	24592	23936	23368
2	6198	2431	644	1413	605	990	1268	6004	25649	24666	23794	23651
3	6174	1944	610	1294	708	1075	1216	7544	25420	24740	23651	23936
4	6125	1588	654	917	764	673	1116	9194	25649	24887	23508	24297
5	6077	1413	654	876	770	622	1132	10595	25963	24887	23368	24887
6	6004	1385	616	764	751	610	1321	11851	26198	25039	23230	25268
7	5908	1330	932	678	708	667	1067	12964	26120	25039	23092	25344
8	5766	1251	649	708	649	809	1548	14091	25806	25039	22953	25420
9	5624	1166	727	690	802	809	1404	15022	25497	25116	22815	25344
10	5485	1059	822	627	961	842	764	15909	25420	25116	22679	25268
11	5392	968	961	667	1489	739	622	16940	25192	25116	22477	25192
12	5301	896	975	616	2142	790	616	17856	24963	25192	22343	24963
13	5188	869	910	667	3305	822	673	18652	24518	25192	22208	24740
14	5053	828	696	667	4327	751	678	19420	24297	25192	22008	24592
15	4876	842	632	673	4388	673	616	20214	24297	25192	21812	24371
16	4703	998	638	1021	4167	678	939	21034	24371	25192	21616	24150
17	4492	1005	616	2095	3861	632	1067	21812	24445	25192	21419	23580
18	4287	1578	764	1876	3556	661	998	22746	24445	25192	21227	23022
19	4108	1268	889	1413	3209	733	828	23580	24445	25116	21034	22477
20	3888	1140	939	348	2858	809	751	24224	24445	25039	21034	21943
21	3715	925	684	396	2497	903	632	24592	24445	25039	21034	21878
22	3522	649	622	889	2154	1132	678	24887	24445	24887	20464	22141
23	3338	573	802	739	1831	1182	1067	25039	24445	24887	20276	21943
24	3145	547	835	716	1489	1339	1909	25420	24445	24740	20276	21550
25	3130	1132	733	758	1182	1075	3305	25573	24445	24592	20276	21163
26	3935	1723	1376	696	1330	961	3590	25649	24518	24518	20464	20778
27	4089	1499	4267	563	1451	2179	2701	25649	24518	24445	20906	20276
28	3420	1157	4147	594	1691	3437	1619	25497	24518	24297	21098	19661
29	2673	802	1166	696	---	2618	1798	25573	24518	24224	21419	18768
30	1978	654	513	733	---	1598	3130	25573	24518	24150	22074	17856
31	1990	---	1174	696	---	809	---	25649	---	24007	22884	---
MAX	6320	2510	4267	2095	4388	3437	3590	25649	26198	25192	23936	25420
MIN	1978	547	513	348	605	610	616	4682	24297	24007	20276	17856
††	1,076.3	1,057.2	1,067.2	1,058.4	1,069.4	1,063.4	1,087.4	1,141.1	1,139.6	1,138.7	1,137.6	1,128.0
†	2,302	605	1,321	673	1,529	1,005	4,031	25,728	24,592	23,936	23,161	17,257
‡	-4,617	-1,697	+716	-648	+856	-524	+3,026	+21,697	-1,136	-656	-775	-5,904

CAL YR 1976....................‡ -198
WTR YR 1977....................‡ +10,338

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.
NOTE.--Daily contents, in acre-feet, usually at 0900 hours.

12105900 GREEN RIVER BELOW HOWARD A. HANSON DAM, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE¼NW¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi (1.1 km) upstream from Bear Creek, 0.7 mi (1.1 km) downstream from Howard A. Hanson Dam, 5.0 mi (8.0 km) southeast of Palmer, and at mile 63.8 (102.7 km).

DRAINAGE AREA.--221 mi² (572 km²).

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 990 ft (302 m), from topographic map.

REMARKS.--Records excellent. Flow regulated by Howard A. Hanson Reservoir (see sta 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--17 years, 1,069 ft³/s (30.27 m³/s) 65.69 in/yr (1,669 mm/yr), 774,500 acre-ft/yr (955 hm³/yr) adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s (346 m³/s) Feb. 21, 1961, gage height, 14.40 ft (4.389 m); minimum, 87 ft³/s (2.46 m³/s) Dec. 29, 1961, gage height, 3.49 ft (1.064 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,980 ft³/s (113 m³/s) Jan. 18, gage height, 9.82 ft (2.993 m); minimum, 168 ft³/s (4.76 m³/s) May 17, gage height, 3.87 ft (1.180 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	591	687	515	808	550	860	1170	412	955	244	244	249
2	261	890	479	803	492	776	1210	356	1060	244	244	249
3	259	808	456	840	437	803	1190	322	970	246	244	249
4	259	667	431	731	443	771	1210	336	915	244	244	251
5	259	512	431	635	446	655	1390	322	915	246	244	251
6	256	446	400	599	440	655	1980	311	965	244	244	300
7	272	440	740	536	434	671	2280	317	1000	244	244	364
8	285	431	910	498	370	767	2540	319	975	246	244	364
9	282	424	767	495	328	830	2280	356	835	246	244	364
10	282	403	683	459	344	830	1740	403	758	246	242	364
11	279	367	671	459	376	753	1370	406	758	246	242	364
12	279	344	671	469	406	699	1200	409	753	246	242	364
13	279	325	704	472	440	699	1170	412	687	246	242	364
14	285	319	667	472	659	687	1130	415	575	246	242	364
15	300	333	603	479	850	635	1010	418	495	246	242	364
16	298	526	603	529	840	611	1040	421	443	246	242	453
17	295	789	568	1340	830	575	1080	394	443	246	242	512
18	292	1070	575	3040	816	554	1050	424	443	246	242	508
19	290	1040	595	3520	798	568	950	446	443	246	242	508
20	287	830	663	2070	776	583	880	533	412	246	242	519
21	285	789	635	1340	753	599	812	591	391	246	242	536
22	279	671	564	1210	731	731	780	591	391	246	242	579
23	277	564	675	1070	699	821	830	591	391	244	242	758
24	274	508	708	870	671	930	955	647	362	244	242	850
25	277	571	695	808	533	905	1550	683	325	244	242	845
26	397	794	825	789	459	816	2150	735	325	244	244	840
27	639	890	1820	691	466	985	2120	762	325	244	244	835
28	808	835	3170	607	663	1490	1490	767	325	244	244	920
29	667	708	2280	561	---	1710	855	767	306	244	244	960
30	508	687	1050	564	---	1490	385	767	266	244	246	960
31	502	---	776	557	---	1100	---	780	---	244	246	---
TOTAL	10803	18588	25330	28321	16050	25559	39797	15413	18207	7598	7536	15388
MEAN	348	620	817	914	573	824	1327	497	607	245	243	513
MAX	808	1070	3170	3520	850	1710	2540	780	1060	246	246	960
MIN	256	319	400	459	328	554	385	311	266	244	242	249
AC-FT	21430	36870	50240	56170	31840	50760	78940	30570	36110	15070	14950	30520
†	-4,617	-1,697	+716	-648	+856	-524	+3,026	+21,697	-1,136	-656	-775	-5,904
MEAN‡	273	591	829	903	589	816	1,378	850	588	234	231	414
CFSM‡	1.24	2.67	3.75	4.09	2.67	3.69	6.24	3.85	2.66	1.06	1.05	1.87
IN.‡	1.43	2.98	4.32	4.71	2.77	4.26	6.95	4.43	2.97	1.22	1.20	2.09
AC-FT‡	16,810	35,170	50,960	55,520	32,700	50,180	81,970	52,270	34,970	14,410	14,180	24,620

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CAL YR 1976:  TOTAL  357,790   MEAN   978   MAX   7,390   MIN  219   AC-FT  709,700
   DO.....:   MEAN‡      978   CFSM‡ 4.43   IN.‡ 60.19   AC-FT‡  709,500
WTR YR 1977:  TOTAL  228,590   MEAN   626   MAX   3,520   MIN  242   AC-FT  453,400
   DO.....:   MEAN‡      641   CFSM‡ 2.90   IN.‡ 39.34   AC-FT‡  463,700
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† Change in contents, in acre-feet, in Howard A. Hanson Reservoir.
‡ Adjusted for change in contents, in Howard A. Hanson Reservoir.

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE¼SE¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at city of Tacoma purification plant, 0.6 mi (1.0 km), downstream from diversion dam, 2 mi (3.2 km) southeast of Palmer, and at mile 60.4 (97.2 km).

DRAINAGE AREA.--231 mi² (598 km²).

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 859.55 ft (261.985 m) above mean sea level.

REMARKS.--Records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (see sta 12105800), 4.1 mi (6.6 km) upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 109 ft³/s (3.09 m³/s) above station for municipal supply. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--14 years, 1,055 ft³/s (29.88 m³/s), 764,300 acre-ft/yr (942 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s (317 m³/s) Dec. 6, 1975, gage height, 11.62 ft (3.542 m); minimum, 20 ft³/s (0.566 m³/s) part or all of each day Oct. 26, 27, Nov. 3-6, 1974, gage height, 3.99 ft (1.216 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, had a discharge of 27,800 ft³/s (787 m³/s), by slope-area measurement at site 0.6 mi (1.0 km) downstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,720 ft³/s (134 m³/s), Jan. 18, gage height, 9.25 ft (2.819 m); minimum, 125 ft³/s (3.54 m³/s) Aug. 20, 21, 22, 23, gage height, 4.94 ft (1.506 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	568	631	427	828	490	841	1220	341	1010	145	133	157
2	167	855	368	820	427	757	1230	290	1130	145	130	151
3	163	770	346	855	341	792	1220	253	1030	145	130	154
4	157	617	310	764	346	757	1230	280	978	145	130	167
5	157	421	310	624	352	624	1390	266	978	142	130	164
6	157	335	280	582	346	631	1980	253	1020	142	130	203
7	170	325	694	510	335	659	2300	253	1050	139	130	280
8	181	310	907	451	275	764	2570	253	1020	136	130	285
9	177	300	743	445	219	848	2260	285	862	136	130	280
10	181	285	638	409	244	834	1710	346	771	136	130	280
11	177	244	610	385	280	750	1360	363	764	136	130	280
12	177	219	610	415	325	687	1190	352	764	136	130	280
13	177	199	645	427	379	680	1150	352	680	136	130	276
14	181	191	603	433	596	659	1110	363	542	133	127	276
15	191	211	516	451	827	603	1010	368	433	133	127	276
16	191	427	516	549	813	562	1060	385	352	133	127	358
17	191	764	477	1410	799	610	1080	379	352	133	127	433
18	188	1040	484	3380	785	490	1050	415	352	133	127	433
19	184	1040	503	4030	771	510	966	421	352	133	127	439
20	184	792	575	2240	757	529	870	510	320	130	127	464
21	177	743	562	1450	722	562	806	589	290	130	125	536
22	177	624	471	1230	687	715	771	575	295	130	125	549
23	170	477	659	1100	652	834	827	582	290	130	130	750
24	170	409	680	877	617	938	946	652	262	130	133	878
25	195	555	659	799	458	915	1470	701	223	130	133	878
26	300	750	862	778	368	877	2080	764	219	133	170	870
27	549	862	1830	666	379	1130	2050	785	215	133	148	855
28	750	799	3480	562	610	1520	1480	806	215	133	148	922
29	610	666	2540	490	---	1700	848	813	203	136	154	978
30	409	536	1160	503	---	1490	310	806	167	133	188	954
31	409	---	702	497	---	1140	---	827	---	133	167	---
TOTAL	7835	16405	24257	28952	14200	25408	39524	14620	17139	4198	4203	13806
MEAN	253	547	782	934	507	820	1317	472	571	135	136	460
MAX	750	1040	3480	4030	827	1700	2570	827	1130	145	188	978
MIN	157	191	280	385	219	490	310	253	167	130	125	151
AC-FT	15540	32540	48110	57430	28170	50400	78400	29010	34000	8330	8340	27380

CAL YR 1976 TOTAL 343574 MEAN 939 MAX 7750 MIN 133 AC-FT 681500
WTR YR 1977 TOTAL 210555 MEAN 577 MAX 4030 MIN 125 AC-FT 417600

12107500 GREEN RIVER NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°17'00", long 122°03'10", in NW¼NW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, at highway bridge, 0.8 mi (1.3 km) upstream from Newaukum Creek, and 3 mi (4.8 km) southwest of Black Diamond.

DRAINAGE AREA.--281 mi² (728 km²).

PERIOD OF RECORD.--Aug. 3 to Aug. 4, 1977 (discontinued).

COOPERATION.--Coliform analyses were performed by Washington State Department of Ecology.

WATER QUALITY DATA, AUGUST 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
03...	1110	170	75	7.9	18.2	0	10.1	107	B40	B4	28
03...	1400	170	75	8.1	21.0	--	9.8	110	--	--	--
03...	1745	170	79	8.3	22.8	0	9.2	107	B100	B8	--
03...	2050	172	75	8.1	21.5	--	8.6	98	--	--	--
03...	2340	173	74	7.8	19.8	0	8.5	93	B150	B13	--
04...	0225	175	74	7.7	18.4	--	8.7	93	--	--	--
04...	0510	178	74	7.7	17.4	0	8.9	93	B300	B4	--
04...	0815	181	74	7.8	16.8	--	9.4	97	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
03...	9	8.4	1.7	4.0	.4	23	0	19	.5	5.2
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	22	0	18	.2	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
03...	2.1	.0	14	47	17	.17	.02	.15	.01	.00
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	26	.31	.09	.19	.01	.00
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW¼SW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi (0.2 km) downstream from West Whitney Hill bridge, 0.8 mi (1.3 km) upstream from mouth, and 3.5 mi (5.6 km) southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi² (71.0 km²).

PERIOD OF RECORD.--July 1944 to November 1950, water year 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WRD Wash. 1974: 1973(M), WDR WA-76-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 310 ft (94 m), from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Records good except those for period of no gage-height record Feb. 14 to Mar. 16, which are fair. Many small diversions above station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--31 years (water years 1945-50, 1953-77), 62.8 ft³/s (1.778 m³/s), 31.12 in/yr (790 mm/yr), 45,500 acre-ft/yr (56.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft³/s (5.15 m³/s) probably Feb. 17, 1949, gage height, 3.54 ft (1.079 m), from recorded range in stage, from rating curve extended above 600 ft³/s (17.0 m³/s); minimum, 8.0 ft³/s (0.23 m³/s) Oct. 13, 14, 1952; minimum gage height, 0.62 ft (0.189 m) Aug. 26, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft³/s (12.7 m³/s) and maximum (*) from peak stage indicator:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 3	unknown	*234	6.63	*2.16	0.658

Minimum discharge, 12 ft³/s (0.34 m³/s) Aug. 19, gage height, 1.01 ft (0.308 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	46	22	36	36	70	73	29	90	23	16	24
2	21	32	21	35	35	80	58	30	68	23	16	22
3	23	27	21	34	34	210	53	33	51	23	15	23
4	20	25	21	32	32	140	47	40	78	23	15	25
5	19	24	21	31	32	95	45	34	58	23	15	23
6	19	24	20	29	32	75	41	32	46	23	14	21
7	18	23	46	28	32	85	40	31	42	22	14	19
8	18	23	48	27	31	110	45	34	41	21	14	19
9	17	23	43	26	31	120	45	30	37	21	14	18
10	18	23	34	25	36	100	41	29	36	21	14	18
11	19	22	31	26	39	75	39	33	33	21	14	17
12	19	21	29	33	40	85	37	30	33	21	14	16
13	19	21	28	41	40	80	37	28	32	21	14	16
14	18	21	27	41	35	75	36	30	32	22	14	16
15	19	22	26	43	34	70	37	34	31	20	14	16
16	18	23	25	50	32	66	53	41	30	19	14	16
17	18	25	25	54	32	55	42	51	28	20	13	16
18	17	26	27	76	32	51	40	53	27	20	13	16
19	17	24	25	63	31	54	37	43	27	19	13	20
20	17	24	24	50	31	54	35	39	27	19	14	21
21	17	23	24	45	34	51	34	36	27	18	14	31
22	17	23	26	41	32	50	35	34	26	18	14	24
23	17	24	90	39	30	61	33	36	26	18	19	35
24	18	24	61	36	29	63	32	43	25	17	39	48
25	21	28	56	34	34	66	31	39	24	17	24	35
26	20	26	117	33	35	66	33	48	24	17	58	29
27	19	24	82	31	33	94	32	43	23	17	32	25
28	25	23	54	30	60	69	30	43	23	17	23	25
29	27	23	50	30	---	58	30	48	23	17	23	30
30	24	22	43	30	---	53	29	42	23	16	53	30
31	34	---	40	30	---	51	---	61	---	16	32	---
TOTAL	614	739	1207	1159	964	2432	1200	1177	1091	613	615	694
MEAN	19.8	24.6	38.9	37.4	34.4	78.5	40.0	38.0	36.4	19.8	19.8	23.1
MAX	34	46	117	76	60	210	73	61	90	23	58	48
MIN	17	21	20	25	29	50	29	28	23	16	13	16
CFSM	.72	.90	1.42	1.37	1.26	2.87	1.46	1.39	1.33	.72	.72	.84
IN.	.83	1.00	1.64	1.57	1.31	3.30	1.63	1.60	1.48	.83	.83	.94
AC-FT	1220	1470	2390	2300	1910	4820	2380	2330	2160	1220	1220	1380

CAL YR 1976 TOTAL 18835 MEAN 51.5 MAX 337 MIN 17 CFSM 1.88 IN 25.57 AC-FT 37360
WTR YR 1977 TOTAL 12505 MEAN 34.3 MAX 210 MIN 13 CFSM 1.25 IN 16.98 AC-FT 24800

12110003 WILDERNESS LAKE OUTLET NEAR MAPLE VALLEY, WA

LOCATION.--Lat 47°22'34", long 122°02'14", in NE¼SE¼ sec.21, T.22 N., R.6 E., King County, Hydrologic Unit 17110013, 700 ft (213 m) downstream from lake outlet and 2.1 mi (3.4 km) south of Maple Valley.

DRAINAGE AREA.--0.66 mi² (1.71 km²).

PERIOD OF RECORD.--November 1976 to September 1977 (discontinued).

GAGE.--Water stage recorder. Datum of gage is 457.87 ft (139.559 m) above mean sea level.

REMARKS.--Records fair except those during period of no gage-height record, Mar. 17-30, which are poor. Some natural regulation from Lake Wilderness. No known diversion between station and mouth of lake.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge during period November 1976 to September 1977, 4.7 ft³/s (0.13 m³/s) Mar. 24; maximum gage height, 3.26 ft (0.994 m) Mar. 23, backwater from unknown source; minimum, no flow November 18, 19, 21, 22, 29, 30, December 1-4, 10-13, August 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	.00	.13	.27	.70	1.0	1.0	1.2	.37	.08	.21
2		---	.00	.08	.21	.90	1.5	1.4	.85	.35	.06	.37
3		---	.00	.07	.12	1.2	2.1	1.5	.54	.19	.06	.19
4		---	.00	.07	.12	.99	2.0	1.4	1.2	.19	.08	.12
5		---	.01	.21	.80	.95	2.5	1.2	1.3	.27	.08	.12
6		---	.01	.56	.78	.68	2.0	1.0	1.4	.27	.08	.05
7		---	.02	.53	.27	.68	1.7	1.2	2.6	.41	.06	.17
8		---	.01	.24	.21	.82	2.2	.95	3.0	.46	.05	.09
9		---	.01	.09	.25	.88	1.9	.95	2.1	.44	.06	.03
10		---	.00	.11	.33	.82	1.5	.95	1.7	.25	.04	.05
11		---	.00	.12	.25	.85	.95	1.1	1.2	.23	.02	.09
12		---	.00	.24	.27	.99	1.1	.95	.99	.32	.02	.05
13		---	.00	.29	.29	.92	.92	.78	.85	.31	.01	.04
14		---	.01	.19	.27	.92	.59	.75	.85	.51	.02	.05
15		---	.01	.19	.25	.92	.56	1.2	.71	.59	.03	.06
16		---	.01	.21	.25	.88	1.0	1.9	.56	.54	.01	.04
17		---	.02	.21	1.2	.90	1.5	2.0	.72	.49	.01	.03
18		.00	.01	.24	.95	.95	1.6	1.9	.78	.37	.01	.03
19		.00	.02	.15	.49	.99	1.1	2.0	.65	.31	.01	.08
20		.01	.02	.14	.51	1.5	.49	2.1	.82	.35	.01	.06
21		.00	.02	.13	.70	2.0	1.7	1.8	.65	.29	.00	.05
22		.00	.04	.14	.65	3.0	1.3	1.4	1.3	.33	.01	.04
23		.01	.08	.12	.55	3.8	.82	1.4	1.5	.21	.15	.12
24		.01	.04	.12	.50	4.7	.75	1.7	1.1	.15	.21	.17
25		.01	.07	.13	.45	3.0	.59	1.5	1.7	.21	.27	.13
26		.01	.13	.13	.45	2.0	.59	1.4	1.0	.17	.41	.15
27		.01	.12	.15	.45	1.5	.46	1.4	.31	.10	.33	.35
28		.01	.22	.15	.50	1.3	.31	1.5	.41	.10	.23	.46
29		.00	.25	.19	---	1.1	.47	1.4	.29	.13	.19	.33
30		.00	.19	.21	---	1.0	1.2	.92	.19	.06	.46	.25
31		---	.14	.25	---	.95	---	1.1	---	.06	.35	---
TOTAL		---	1.46	5.79	12.34	42.69	36.40	41.75	32.47	9.03	3.41	3.98
MEAN		---	.047	.19	.44	1.38	1.21	1.35	1.08	.29	.11	.13
MAX		---	.25	.56	1.2	4.7	2.5	2.1	3.0	.59	.46	.46
MIN		---	.00	.07	.12	.68	.31	.75	.19	.06	.00	.03
AC-FT		---	2.9	11	24	85	72	83	64	18	6.8	7.9

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW¼ sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi (0.3 km) upstream from fish hatchery, 2.7 mi (4.3 km) east of Auburn, and at mile 0.9 (1.4 km).

DRAINAGE AREA.--66.7 mi^2 (172.8 km^2), excludes 3.67 mi^2 (9.51 km^2) in vicinity of Youngs Lake, flow from which has been diverted to Cedar River since about 1935.

PERIOD OF RECORD.--August 1960 to current year. Chemical analyses October 1962 to September 1971, at site 1.0 mi (1.6 km) upstream from gaging station.

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (21 m), from topographic map.

REMARKS.--Records good. City of Seattle diverts probably less than 2 ft^3/s (0.057 m^3/s) from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966 fish hatchery diverted up to 19 ft^3/s (0.538 m^3/s) 0.5 mi (0.8 km) above station, which was returned below the station.

AVERAGE DISCHARGE.--17 years, 124 ft^3/s (3.512 m^3/s), 89,840 acre-ft/yr (111 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,090 ft^3/s (30.9 m^3/s) Feb. 28, 1972, gage height, 6.17 ft (1.881 m); minimum, 11 ft^3/s (0.312 m^3/s) Sept. 5, 1963, gage height, 1.07 ft (0.326 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 440 ft^3/s (12.5 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 3	1100	*251	7.11	*3.30	1.006

Minimum discharge, 24 ft^3/s (0.680 m^3/s) Aug. 18, gage height, 1.78 ft (0.543 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	65	38	80	86	131	106	61	120	41	29	39
2	39	52	38	79	82	131	97	64	101	42	28	37
3	47	46	39	77	78	237	95	74	88	42	28	38
4	42	44	39	74	75	202	92	70	111	42	28	43
5	40	42	39	69	74	161	90	67	104	41	28	42
6	39	41	39	65	73	142	87	64	90	41	27	37
7	39	41	50	64	72	142	84	62	82	40	27	35
8	38	42	51	62	69	181	88	62	77	39	27	34
9	38	41	47	61	68	213	91	61	73	39	27	33
10	38	41	43	60	70	181	86	61	68	39	26	33
11	38	40	42	61	82	153	83	68	66	38	26	33
12	37	40	41	84	82	158	80	62	62	39	26	32
13	37	40	42	96	82	163	83	59	61	39	26	31
14	37	40	43	90	77	158	83	58	59	38	26	31
15	37	42	43	87	74	159	82	58	59	37	26	31
16	37	44	43	91	73	142	87	64	58	36	26	32
17	37	48	46	95	70	129	83	68	54	37	26	31
18	37	50	52	121	69	120	80	64	53	36	26	32
19	36	46	48	126	68	117	77	60	52	35	25	36
20	36	46	46	110	68	114	75	58	51	34	26	38
21	36	45	45	103	69	113	74	57	51	33	26	37
22	37	44	50	99	68	113	77	56	50	33	26	34
23	37	42	97	95	66	129	73	61	49	32	33	44
24	38	42	82	91	64	129	70	70	47	32	54	60
25	42	43	74	88	66	131	69	64	46	31	54	53
26	41	42	109	84	69	123	69	72	45	31	83	47
27	38	41	112	83	67	126	67	81	45	31	63	42
28	47	40	97	80	92	114	64	78	44	30	46	42
29	55	39	92	79	---	107	63	75	43	30	43	44
30	45	38	88	78	---	100	61	69	42	29	55	42
31	58	---	83	80	---	99	---	95	---	29	47	---
TOTAL	1240	1307	1798	2612	2061	4418	2416	2043	1951	1116	1064	1143
MEAN	40.0	43.6	58.0	84.3	73.6	143	80.5	65.9	65.0	36.0	34.3	38.1
MAX	58	65	112	126	92	237	106	95	120	42	83	60
MIN	36	38	38	60	64	99	61	56	42	29	25	31
AC-FT	2460	2590	3570	5180	4090	8760	4790	4050	3870	2210	2110	2270

CAL YR 1976 TOTAL 39496 MEAN 108 MAX 600 MIN 35 AC-FT 78340
WTR YR 1977 TOTAL 23169 MEAN 63.5 MAX 237 MIN 25 AC-FT 45960

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW¼NW¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi (1.9 km) east of Auburn, 1.8 mi (2.9 km) downstream from Big Soos Creek, and at mile 32.0 (51.5 km).

DRAINAGE AREA.--399 mi² (1,033 km²), excludes 3.67 mi² (9.51 km²) in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--Water discharge records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (see sta 12105800), 32.5 mi (52.3 km) above station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 109 ft³/s (3.09 m³/s) from river at headworks near Palmer, 29 mi (46.7 km) above station, for municipal use. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--41 years, 1,372 ft³/s (38.86 m³/s), 994,000 acre-ft/yr (1,230 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s (796 m³/s) Nov. 23, 1959, elevation, 69.75 ft (21.260 m); minimum, 81 ft³/s (2.29 m³/s) Sept. 23, 1952; minimum elevation, 53.28 ft (16.240 m) Aug. 13, 17, 18, 19, 20, 21, 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,490 ft³/s (127 m³/s) Jan. 19, elevation, 58.30 ft (17.770 m); minimum, 220 ft³/s (6.23 m³/s) Aug. 13, 17, 18, 19, 20, 21, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1050	711	657	1070	749	1170	1540	551	1310	320	240	296
2	380	1030	569	1060	722	1220	1580	569	1490	300	240	280
3	356	1020	569	1050	591	1320	1550	485	1410	296	236	288
4	356	861	486	1050	579	1320	1520	503	1380	296	236	296
5	356	675	475	835	574	1040	1610	497	1330	292	236	304
6	324	563	470	789	566	984	2040	453	1290	292	232	284
7	296	503	591	731	556	1030	2560	446	1330	288	232	347
8	312	486	1220	639	541	1150	2880	450	1300	284	232	365
9	312	475	908	627	432	1370	2680	439	1210	280	232	365
10	312	459	876	609	456	1310	2260	501	1030	280	228	360
11	312	426	809	555	495	1180	1760	554	1010	280	228	360
12	308	395	802	639	533	1110	1540	532	988	284	228	356
13	304	360	809	681	593	1120	1450	523	967	280	224	351
14	304	347	841	675	633	1100	1450	536	866	276	228	351
15	312	360	724	675	1010	1040	1360	550	734	272	228	347
16	316	415	705	763	1020	970	1360	586	627	268	228	356
17	316	861	699	1100	1010	984	1390	625	591	272	224	492
18	312	1130	675	2940	995	861	1370	609	579	272	224	503
19	304	1330	693	4260	969	848	1280	612	573	264	220	537
20	304	1010	711	2880	956	868	1160	635	561	260	224	537
21	304	956	789	1900	935	887	1110	758	503	260	224	633
22	300	874	705	1530	907	984	1050	758	497	256	224	609
23	296	705	977	1470	868	1170	1030	779	486	252	248	788
24	308	627	1030	1210	828	1230	1140	830	475	252	329	1050
25	308	681	977	1080	757	1330	1440	894	415	248	296	1030
26	324	822	1250	1060	505	1180	2250	963	400	252	400	996
27	508	1050	1710	984	591	1470	2400	1030	395	248	347	968
28	887	1000	3340	864	712	1660	2020	1050	390	248	288	996
29	907	907	3140	756	---	2080	1390	1070	385	248	292	1120
30	621	750	1730	750	---	1880	631	1040	356	244	375	1080
31	633	---	1050	749	---	1600	---	1130	---	244	338	---
TOTAL	12534	21769	31035	35981	20163	37466	48801	20956	24868	8408	7961	16643
MEAN	404	726	1001	1161	720	1209	1627	676	829	271	257	555
MAX	1050	1330	3340	4260	1020	2080	2880	1130	1490	320	400	1120
MIN	296	347	470	555	432	848	631	439	356	244	220	280
AC-FT	24860	43180	61560	71370	39990	74310	96800	41570	49330	16680	15790	33010

CAL YR 1976 TOTAL 475966 MEAN 1300 MAX 9950 MIN 296 AC-FT 944100
WTR YR 1977 TOTAL 286585 MEAN 785 MAX 4260 MIN 220 AC-FT 568400

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1952 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1952 to current year.

INSTRUMENTATION.--Temperature recorder since March 1952.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C July 28, 1958; minimum, 0.5°C Feb. 16, 17, 1956, Dec. 18-21, 1964.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 23.0°C Aug. 12; minimum, 1.5°C Jan. 6-10.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.5	14.0	14.5	9.0	8.5	9.0	3.5	3.0	3.5	4.0	3.5	3.5
2	14.5	13.0	13.5	8.5	8.0	8.0	3.5	3.5	3.5	3.5	3.0	3.5
3	13.0	10.0	11.0	8.5	8.5	8.5	3.5	3.5	3.5	3.0	3.0	3.0
4	14.5	8.0	11.0	8.5	8.0	8.0	4.0	3.5	3.5	3.0	3.0	3.0
5	15.5	9.5	12.0	8.5	8.5	8.5	4.0	4.0	4.0	3.0	2.0	2.0
6	16.5	9.5	13.5	9.0	8.5	9.0	4.5	4.0	4.5	2.0	1.5	2.0
7	16.0	12.0	13.5	9.0	8.0	8.5	5.5	4.5	5.0	1.5	1.5	1.5
8	14.0	11.5	13.0	9.5	8.5	9.0	5.5	5.5	5.5	1.5	1.5	1.5
9	13.5	12.0	13.0	9.5	9.5	9.5	5.5	5.5	5.5	1.5	1.5	1.5
10	14.0	13.5	13.5	9.5	9.0	9.0	5.5	5.0	5.5	2.0	1.5	2.0
11	14.0	13.5	13.5	9.0	9.0	9.0	6.0	5.5	5.5	3.5	2.0	3.0
12	13.5	11.5	12.0	9.0	8.5	9.0	5.5	5.0	5.5	4.0	3.5	3.5
13	12.0	11.0	11.5	8.5	6.5	8.0	5.5	5.0	5.5	4.0	4.0	4.0
14	11.5	10.5	11.0	8.0	6.0	6.5	5.5	5.5	5.5	4.5	4.0	4.5
15	11.0	10.0	10.5	8.0	8.0	8.0	6.5	5.5	6.0	5.5	4.5	5.0
16	11.0	9.5	10.0	9.0	8.0	8.5	6.5	6.0	6.5	5.5	5.5	5.5
17	10.0	8.5	9.0	9.0	8.5	9.0	6.0	5.5	5.5	6.0	5.5	5.5
18	9.5	8.0	9.0	8.5	7.0	8.0	6.0	5.5	5.5	6.0	6.0	6.0
19	9.0	8.5	9.0	7.0	6.5	6.5	5.5	5.0	5.5	6.0	5.0	5.5
20	9.0	7.0	8.0	6.5	6.5	6.5	5.0	4.0	4.5	5.0	5.0	5.0
21	8.5	7.0	8.0	6.5	6.0	6.5	5.0	4.5	4.5	5.0	5.0	5.0
22	8.5	8.0	8.0	6.0	5.5	5.5	5.0	5.0	5.0	5.0	5.0	5.0
23	9.0	8.5	9.0	5.5	5.5	5.5	5.0	4.5	4.5	5.0	4.5	4.5
24	9.0	9.0	9.0	6.0	5.5	5.5	4.5	4.0	4.5	4.5	4.0	4.5
25	9.5	9.0	9.0	6.0	5.5	5.5	4.5	4.0	4.5	4.0	3.5	3.5
26	10.0	9.5	10.0	5.5	4.0	4.5	5.5	4.5	5.0	4.0	3.5	3.5
27	10.0	8.5	9.0	4.0	3.5	3.5	5.5	5.0	5.5	4.0	3.5	3.5
28	9.0	8.0	8.5	3.5	2.0	3.0	5.0	4.5	4.5	4.0	4.0	4.0
29	9.0	8.5	9.0	3.0	2.0	2.0	4.5	4.5	4.5	4.0	4.0	4.0
30	9.0	7.0	8.0	3.0	2.0	2.0	4.5	4.5	4.5	4.0	4.0	4.0
31	9.0	8.0	8.5	---	---	---	4.5	4.0	4.5	4.5	4.0	4.5
MONTH	16.5	7.0	10.5	9.5	2.0	7.0	6.5	3.0	5.0	6.0	1.5	4.0

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	4.5	5.0	8.0	7.0	8.0	8.5	7.0	8.0	---	---	---
2	5.5	5.5	5.5	7.0	6.5	6.5	9.5	6.5	8.0	---	---	---
3	5.5	5.0	5.5	6.5	6.0	6.5	10.5	8.0	9.0	---	---	---
4	5.5	5.0	5.5	6.0	5.5	5.5	11.0	8.0	9.5	---	---	---
5	5.5	4.5	5.0	7.0	6.0	6.5	11.5	8.5	10.0	---	---	---
6	6.0	5.0	5.5	8.0	7.0	8.0	11.5	9.0	10.0	12.5	8.5	10.5
7	5.5	5.0	5.5	8.0	7.0	8.0	10.5	9.5	10.0	14.0	9.0	11.5
8	6.0	5.0	5.5	8.0	7.0	8.0	10.0	9.0	9.5	14.0	10.5	12.0
9	7.0	6.0	6.5	7.0	6.5	6.5	9.0	8.5	9.0	15.5	10.0	12.5
10	8.0	7.0	8.0	7.0	6.0	6.5	8.5	8.5	8.5	14.5	10.0	11.5
11	8.0	7.0	8.0	7.0	6.0	6.5	10.0	8.5	9.0	11.5	8.5	10.0
12	8.5	8.0	8.0	7.0	7.0	7.0	10.5	9.0	10.0	14.0	8.0	11.0
13	8.5	7.0	8.0	7.0	6.0	6.5	11.0	9.5	10.0	13.5	10.0	11.5
14	7.0	5.5	6.5	6.5	6.5	6.5	10.0	8.5	9.0	12.5	10.0	11.0
15	6.5	6.0	6.5	7.0	6.5	6.5	9.0	9.0	9.0	14.0	9.0	11.0
16	7.0	6.5	6.5	8.0	6.5	7.0	10.0	8.5	9.0	11.5	9.5	10.0
17	7.0	6.5	6.5	8.0	6.5	7.0	10.0	8.0	9.0	10.5	9.0	9.5
18	8.0	6.5	7.0	8.0	7.0	8.0	11.0	8.5	10.0	12.0	9.0	10.5
19	8.0	6.5	7.0	8.5	7.0	8.0	10.5	8.5	9.5	14.5	9.5	12.0
20	7.0	7.0	7.0	8.0	7.0	8.0	11.5	8.5	10.0	14.5	10.5	12.5
21	7.0	6.5	6.5	8.0	7.0	8.0	11.5	10.0	11.0	13.5	11.0	12.0
22	8.0	7.0	8.0	10.0	8.5	9.0	14.5	10.0	12.0	14.0	10.0	11.5
23	7.0	6.0	6.5	9.5	8.5	9.0	14.5	11.5	13.5	11.5	9.5	10.5
24	6.5	6.0	6.5	9.5	8.0	9.0	15.0	11.5	13.5	12.5	9.0	10.5
25	6.5	6.5	6.5	8.5	6.0	8.0	14.5	12.0	13.5	13.5	9.5	11.5
26	7.0	6.0	6.5	8.5	6.0	8.0	13.0	11.0	12.0	12.0	10.0	11.0
27	8.5	7.0	8.0	8.0	7.0	8.0	11.5	10.0	11.0	10.5	9.0	10.0
28	8.5	8.0	8.0	8.0	6.5	7.0	11.5	8.5	10.0	11.5	9.5	10.0
29	---	---	---	7.0	6.0	6.5	---	---	---	13.5	9.5	11.0
30	---	---	---	8.5	6.0	7.0	---	---	---	10.5	9.5	10.5
31	---	---	---	8.5	7.0	8.0	---	---	---	11.5	10.0	10.5
MONTH	8.5	4.5	6.5	10.0	5.5	7.5	15.0	6.5	10.0	15.5	8.0	11.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	10.5	11.5	18.5	14.5	16.0	21.5	17.0	19.5	17.0	13.0	15.0
2	12.5	9.5	11.0	15.5	13.5	14.5	22.0	17.0	19.5	16.0	14.5	15.0
3	11.5	10.0	11.0	14.5	12.0	13.0	22.0	17.5	20.0	17.0	14.5	15.5
4	12.0	10.5	11.0	15.0	12.0	13.5	20.5	17.5	19.0	18.0	15.0	16.0
5	15.5	11.0	13.0	15.5	12.5	14.0	22.0	17.5	19.5	18.0	15.5	16.5
6	15.5	12.5	14.0	18.0	13.0	15.5	22.0	18.0	20.0	17.0	13.5	15.5
7	13.5	11.5	12.5	19.0	13.5	16.0	21.5	17.5	19.5	16.5	13.5	15.0
8	13.0	11.0	12.0	18.0	15.0	16.5	21.0	17.0	19.0	17.0	13.0	15.0
9	14.5	10.0	12.0	17.0	14.5	15.5	21.5	17.0	19.5	16.5	12.5	14.5
10	15.5	11.5	13.0	17.5	13.5	15.5	22.0	17.5	20.0	16.5	12.5	14.5
11	14.0	12.0	12.5	17.0	14.5	15.5	22.5	18.0	20.0	17.0	12.5	15.0
12	14.5	11.5	13.0	15.5	13.5	14.5	23.0	18.5	20.5	17.5	13.0	15.0
13	14.0	11.5	12.5	17.5	13.5	15.5	22.5	18.5	20.5	17.5	14.0	16.0
14	13.0	11.5	12.5	18.0	14.0	15.5	20.5	17.5	19.0	17.0	14.5	15.5
15	13.5	11.5	12.5	18.5	14.5	16.5	20.5	16.5	18.5	15.5	13.5	14.5
16	17.0	11.0	13.5	17.5	15.0	16.0	22.0	17.0	19.5	15.5	12.5	14.0
17	18.0	13.0	16.0	15.5	14.5	15.0	22.0	18.0	20.0	15.0	12.0	13.5
18	17.5	14.0	15.0	18.0	13.0	15.0	20.5	18.0	19.5	14.5	13.0	13.5
19	16.0	12.0	14.0	18.5	13.5	16.0	19.0	17.0	18.0	15.5	13.5	14.5
20	15.0	13.0	14.0	19.0	14.5	17.0	19.0	15.5	17.0	14.5	13.0	14.0
21	16.0	12.5	14.0	19.5	15.5	17.5	18.0	15.5	16.5	14.5	12.5	13.5
22	16.5	13.0	14.5	20.0	15.5	17.5	17.0	14.5	16.0	14.5	11.5	13.0
23	18.5	12.5	15.0	20.5	15.5	18.0	16.5	15.0	15.5	13.5	12.5	13.0
24	19.0	13.0	16.0	20.5	16.5	18.5	15.5	14.0	15.0	14.0	12.5	13.0
25	18.5	14.5	16.5	19.0	16.5	18.0	15.0	14.0	14.5	13.5	12.0	12.5
26	18.0	14.0	16.0	18.0	15.5	16.5	15.5	14.0	14.5	13.5	11.0	12.5
27	17.5	14.0	16.0	20.0	15.0	17.5	15.5	14.0	14.5	13.0	11.5	12.5
28	17.5	13.5	15.5	19.0	16.5	17.5	15.5	14.5	15.0	13.0	12.5	12.5
29	18.5	14.0	16.5	19.0	15.0	17.0	15.0	14.0	14.5	12.5	12.0	12.5
30	19.5	13.5	16.5	20.0	15.5	17.5	16.5	13.5	14.5	13.0	12.0	12.5
31	---	---	---	21.0	16.0	18.5	17.0	13.5	15.0	---	---	---
MONTH	19.5	9.5	14.0	21.1	12.0	16.0	23.0	13.5	18.0	18.0	11.0	14.0
YEAR	23.0	1.5	10.5									

12113344 GREEN RIVER AT 212TH STREET, NEAR KENT, WA

LOCATION.--Lat 47°24'33", long 122°15'49", in NE¼NW¼ sec.31, T.22 N., R.4 E., King County, Hydrologic Unit 17110013, at 212th Street bridge, 2.5 mi (4.0 km) northwest of Kent City Hall, 2.7 mi (4.3 km) southeast of main terminal building of Sea-Tac Airport, and at mile 12.7 (20.4 km).

DRAINAGE AREA.--433 mi² (1,121 km²).

PERIOD OF RECORD.--Water years 1971, 1973-76, Aug. 3 to Aug. 4, 1977 (discontinued).

COOPERATION.--Coliform analyses were performed by the Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
03...	0715	268	126	7.5	19.0	2	9.9	83	9500	88	45
03...	1200	268	128	7.6	21.6	--	8.1	91	--	--	--
03...	1505	268	135	7.6	23.0	2	8.8	103	6400	58	--
03...	1845	268	135	7.6	23.0	--	8.3	98	--	--	--
03...	2140	268	132	7.0	22.0	--	8.0	92	--	--	--
04...	0035	268	128	7.5	21.0	1	7.6	86	6520	98	--
04...	0315	268	130	7.0	20.0	1	7.6	82	4300	76	--
04...	0620	268	133	7.4	20.2	--	7.6	81	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
03...	0	13	3.0	9.2	1.0	61	0	50	3.1	4.9
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	58	0	48	2.6	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
03...	4.5	.1	17	86	23	.31	.13	.39	.06	.02
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	33	.30	.12	.37	.05	.03
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12113350 GREEN RIVER AT TUKWILA, WA

LOCATION.--Lat 47°27'53", long 122°14'48", in NW¼SW¼ sec.24, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on right bank under highway bridge 0.6 mi (1.0 km) southeast of Tukwila, 1.4 mi (2.3 km) upstream from Black River, and at mile 12.4 (20.0 km).

DRAINAGE AREA.--440 mi² (1,140 km²).

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October 1967 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (Corps of Engineers bench mark).

REMARKS.--Records good. Flow regulated by Howard A. Hanson Reservoir (see sta 12105800) for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 109 ft³/s (3.09 m³/s) from river at headworks near Palmer, 45 mi (72.4 km) above station, for municipal use. Minor diversions and regulation on upstream tributaries. River stages are affected daily by backwater during high tide.

AVERAGE DISCHARGE.--17 years, 1,551 ft³/s (43.92 m³/s), 1,124,000 acre-ft/yr (1,390 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s (343 m³/s) Jan. 31, 1965, elevation, 21.70 ft (6.614 m); minimum recorded, 195 ft³/s (5.52 m³/s) Sept. 14, 15, 1961; minimum observed elevation, 2.26 ft (0.689 m) Oct. 24, 1974, but may have been less during period of no gage-height record Oct. 14-27, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1959 reached a stage of 22.61 ft (6.892 m), present datum from gage-height record of stages above 14.2 ft (4.33 m), discharge, 13,200 ft³/s (374 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,300 ft³/s (122 m³/s) Jan. 19, elevation, 12.08 ft (3.682 m); minimum daily, 250 ft³/s (7.08 m³/s) Aug. 17-22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

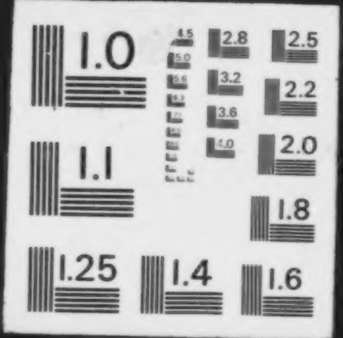
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	680	701	1070	833	1120	1470	740	1660	612	286	378
2	808	661	811	1060	818	1200	1540	740	1410	308	288	362
3	630	668	980	1060	740	1370	1530	707	1410	378	276	362
4	600	645	952	1000	695	1400	1500	677	1300	372	278	378
5	385	738	523	982	680	1170	1540	699	1350	365	276	368
6	375	616	520	830	676	1050	1790	673	1260	360	270	365
7	370	532	562	782	662	1040	2360	605	1280	350	264	368
8	368	536	1010	710	650	1240	2960	593	1290	348	258	420
9	380	508	1040	589	605	1490	2620	500	1200	340	258	422
10	380	505	698	667	585	1300	2320	593	1050	330	256	418
11	380	680	603	666	610	1280	1830	665	990	338	252	428
12	372	655	770	716	661	1280	1580	641	982	340	252	428
13	368	638	782	746	662	1200	1470	623	966	338	252	426
14	385	615	815	761	680	1140	1450	620	866	336	252	418
15	385	612	758	755	602	1150	1380	635	773	332	252	428
16	372	645	688	700	1000	1050	1360	653	701	322	252	622
17	370	611	688	930	1010	1010	1370	662	662	320	250	665
18	370	654	676	2170	1010	903	1370	650	641	322	250	565
19	365	1200	677	4010	900	900	1310	683	673	316	250	582
20	365	1070	668	2190	872	900	1210	609	620	330	250	591
21	365	930	736	2060	900	860	1170	700	580	310	250	617
22	368	686	763	1950	823	902	1110	787	568	310	250	650
23	365	773	860	1600	898	1170	1060	826	562	300	278	700
24	365	677	1040	1300	880	1240	1130	839	565	300	605	976
25	370	654	936	1170	894	1330	1200	869	500	290	488	1020
26	372	731	1100	1110	706	1240	1950	936	470	290	660	982
27	410	620	1360	1070	676	1390	2260	1020	470	290	662	966
28	635	651	2040	956	770	1510	2060	1000	465	290	372	956
29	860	880	3250	870	---	1910	1600	1000	460	296	368	1060
30	710	773	1840	833	---	1870	976	1040	435	296	625	1070
31	850	---	1170	833	---	1670	---	1130	---	290	638	---
TOTAL	13898	21423	30016	36467	22075	38656	48080	23385	25862	10240	9260	17697
MEAN	448	714	968	1182	788	1247	1600	754	862	331	299	590
MAX	1040	1200	3250	4010	1010	1910	2960	1130	1660	612	662	1070
MIN	365	412	523	646	585	900	976	589	435	290	250	362
AC-FT	27570	42490	59530	72080	43780	76670	95370	46380	51300	20330	18360	34710

CAL YR 1976 TOTAL 504536 MEAN 1370 MAX 8930 MIN 300 AC-FT 1001010
WTR YR 1977 TOTAL 296029 MEAN 811 MAX 4010 MIN 250 AC-FT 568900

3 OF 5

PB

287611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1.4
1.6

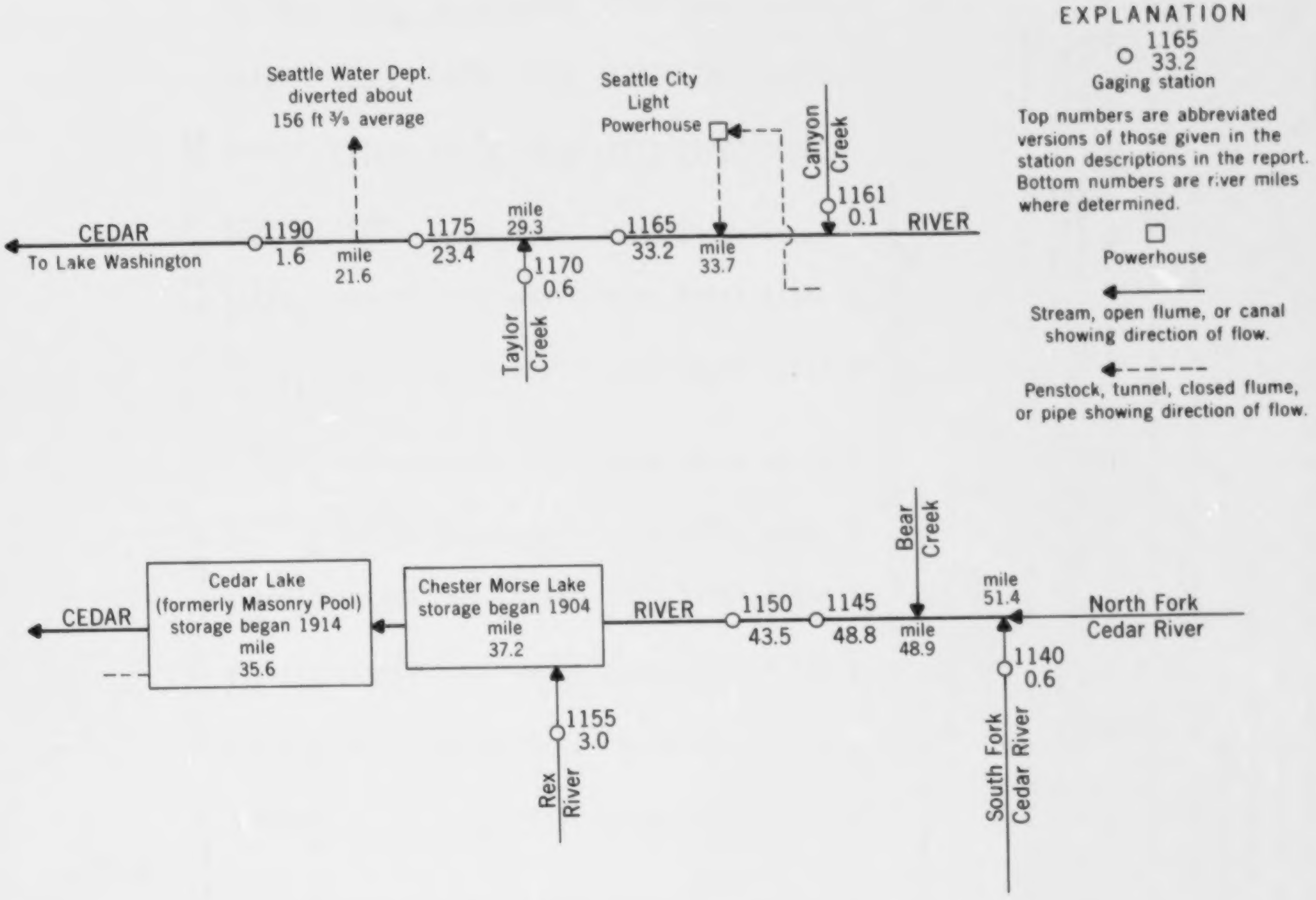
EXPLANATION
1165
33.2
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Seattle Water Dept. diverted about 156 ft³/s average
Seattle City Light Powerhouse
Canyon Creek
1161
0.1
RIVER
CEDAR
To Lake Washington
1190
1.6
mile
21.6
1175
23.4
mile
29.3
1170
0.6
Taylor Creek
1165
33.2
mile
33.7
Bear Creek
mile
51.4
North Fork Cedar River
CEDAR
Cedar Lake (formerly Masonry Pool) storage began 1914 mile 35.6
Chester Morse Lake storage began 1904 mile 37.2
RIVER
1150
43.5
1145
48.8
mile
48.9
1140
0.6
1155
3.0
Rex River
South Fork Cedar River

Figure 13. Gaging stations in Lake Washington basin (Cedar River).

12114000 SOUTH FORK CEDAR RIVER NEAR LESTER, WA

LOCATION.--Lat 47°18'30", long 121°31'00", in NE¼SE¼ sec.15, T.21 N., R.10 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank under logging road bridge, 0.6 mi (1.0 km) upstream from confluence with North Fork and 6.7 mi (10.8 km) north of Lester.

DRAINAGE AREA.--6.00 mi^2 (15.54 km^2).

PERIOD OF RECORD.--October 1944 to current year.

REVISED RECORDS.--WSP 1446: 1953-54. WSP 1736: 1950(M).

GAGE.--Water-stage recorder. Concrete control Aug. 31, 1951, to Dec. 9, 1956, and since Oct. 8, 1957. Altitude of gage is 2,300 ft (701 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Dec. 27 to Jan. 20, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--33 years, 38.4 ft^3/s (1.087 m^3/s) 86.91 in/yr (2,208 mm/yr), 27,800 acre-ft/yr (34.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,340 ft^3/s (66.3 m^3/s) Dec. 9, 1956, gage height, 10.41 ft (3.173 m), from floodmarks, from rating curve extended above 300 ft^3/s (8.50 m^3/s) on basis of slope-area measurement of peak flow; minimum, 1.9 ft^3/s (0.054 m^3/s) Nov. 27, 28, 1952, gage height, 2.80 ft (0.853 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft^3/s (5.66 m^3/s) and maximum (*) from peak-stage indicator:

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	unknown	*233	6.60	*5.86	1.786

Minimum discharge, 3.0 ft^3/s (0.085 m^3/s) part or all of each day Aug. 15-23, gage height, 4.23 ft (1.289 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	30	20	28	14	16	18	61	35	8.2	3.9	8.2
2	5.7	29	18	25	13	16	17	60	36	8.4	3.8	7.7
3	5.9	25	16	23	12	15	19	56	36	7.9	3.7	9.3
4	5.2	21	15	21	12	15	24	50	44	7.9	3.7	14
5	5.1	19	14	19	11	14	32	43	44	7.5	3.7	14
6	4.9	17	15	18	10	15	54	39	45	7.8	3.5	12
7	4.8	16	26	16	9.5	15	95	37	42	6.8	3.5	11
8	4.7	15	28	15	9.1	15	115	36	37	6.5	3.5	11
9	4.7	14	28	14	9.5	15	80	37	32	6.3	3.4	9.6
10	6.2	13	28	13	16	14	61	43	29	6.1	3.4	8.7
11	5.4	12	26	12	18	13	53	41	26	6.4	3.3	8.1
12	5.0	11	25	13	41	13	48	36	23	6.4	3.3	7.5
13	4.8	10	25	12	45	12	49	35	21	5.9	3.2	7.0
14	4.7	10	24	12	36	12	43	36	20	5.5	3.2	6.6
15	4.5	11	27	16	30	11	43	34	18	5.3	3.1	6.3
16	4.5	24	28	25	28	11	43	32	17	5.3	3.1	6.1
17	4.3	36	29	65	27	10	39	31	16	6.0	3.1	5.8
18	4.3	40	31	150	26	9.9	35	30	15	5.2	3.0	5.6
19	4.3	32	28	100	24	9.9	31	29	14	4.9	3.0	5.9
20	4.1	28	26	70	23	9.5	28	29	14	4.7	3.0	10
21	4.1	24	25	50	22	11	28	30	13	4.6	3.0	28
22	4.1	21	23	41	21	13	37	29	13	4.5	3.0	20
23	4.1	19	21	34	19	14	67	30	12	4.4	3.6	21
24	4.1	23	19	29	17	14	108	29	11	4.2	4.7	23
25	16	45	23	26	16	13	121	28	11	4.2	5.1	25
26	24	36	77	23	15	18	108	28	10	4.1	7.8	24
27	17	32	100	21	17	25	82	26	9.7	4.1	4.9	22
28	15	28	68	19	17	21	72	27	9.2	4.4	6.8	21
29	14	25	50	17	---	18	69	26	8.9	4.4	9.6	22
30	13	22	40	16	---	17	64	25	8.4	4.1	13	23
31	16	---	34	14	---	17	---	29	---	3.9	9.8	---
TOTAL	229.9	688	957	957	558.1	442.3	1683	1102	670.2	175.9	138.7	403.4
MEAN	7.42	22.9	30.9	30.9	19.9	14.3	56.1	35.5	22.3	5.67	4.47	13.4
MAX	24	45	100	150	45	25	121	61	45	8.4	13	28
MIN	4.1	10	14	12	9.1	9.5	17	25	8.4	3.9	3.0	5.6
CFSM	1.24	3.82	5.15	5.15	3.32	2.38	9.35	5.92	3.72	.95	.75	2.23
IN.	1.43	4.26	5.93	5.93	3.46	2.74	10.43	6.83	4.15	1.09	.86	2.50
AC-FT	456	1360	1900	1900	1110	877	3340	2190	1330	349	275	800

CAL YR 1976 TOTAL 11641.1 MEAN 31.8 MAX 257 MIN 4.1 CFSM 5.30 IN 72.17 AC-FT 23090
WTR YR 1977 TOTAL 8005.5 MEAN 21.9 MAX 150 ´MIN 3.0 CFSM 3.65 IN 49.63 AC-FT 15880

12114500 CEDAR RIVER BELOW BEAR CREEK, NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°20'30", long 121°32'50", in SE¼SE¼ sec.32, T.22 N., R.10 E., King County, Hydrologic Unit 17110012, on right bank 500 ft (152 m) downstream from Bear Creek and 12.2 mi (19.6 km) southeast of Cedar Falls.

DRAINAGE AREA.--25.4 mi² (65.8 km²).

PERIOD OF RECORD.--October 1945 to December 1963, October 1975 to current year.

REVISED RECORDS.--WSP 1716: 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,880 ft (573 m) from topographic map. Prior to Sept. 16, 1960, at site 90 ft (27.4 m) upstream at datum 2.35 ft (0.714 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--20 years (water years 1946-63, 1976-77), 177 ft³/s (5.013 m³/s), 128,200 acre-ft/yr (158 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,620 ft³/s (215.8 m³/s) Nov. 22, 1959, gage height, 6.98 ft (2.128 m) site and datum then in use, from rating curve extended above 890 ft³/s (25.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 12 ft³/s (0.34 m³/s) Nov. 27, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*) from rating curve extended above 510 ft³/s (14.4 m³/s) on basis of slope-area measurement at gage height 9.37 ft (2.856 m):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*950	26.9	*5.30	1.615

Minimum discharge, 14 ft³/s (0.39 m³/s) Aug. 20, 21, gage height, 2.55 ft (0.777 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	153	86	129	69	100	121	261	197	51	22	65
2	34	120	80	117	65	97	112	264	195	51	22	63
3	63	105	74	107	61	93	112	258	185	50	21	52
4	33	95	69	98	58	86	123	231	252	50	20	77
5	31	86	65	86	56	86	155	195	252	48	20	71
6	30	79	81	79	54	86	237	170	261	50	20	61
7	28	73	177	74	51	93	358	180	240	45	19	58
8	28	71	170	70	50	102	408	153	197	42	17	58
9	27	67	148	65	52	105	312	153	165	40	17	51
10	35	62	135	61	65	93	246	175	148	40	16	47
11	32	59	123	59	107	88	213	182	137	40	16	43
12	29	56	117	60	264	85	188	160	129	40	15	41
13	27	53	119	58	243	79	190	148	121	38	15	40
14	26	51	107	56	177	76	175	155	114	36	15	37
15	25	58	131	71	151	72	167	148	105	35	15	36
16	25	115	131	103	135	67	177	142	102	34	15	35
17	24	176	133	273	133	63	162	135	97	37	15	34
18	23	180	135	642	133	63	151	142	91	34	15	32
19	23	144	119	428	121	64	135	135	86	32	15	35
20	22	121	112	285	115	62	125	135	80	31	15	59
21	22	105	103	216	112	72	119	155	78	30	15	127
22	22	95	100	172	110	83	129	153	75	29	15	88
23	22	86	98	144	102	93	197	160	71	28	17	91
24	26	102	88	125	95	90	327	148	67	28	29	105
25	93	190	115	110	93	88	428	137	64	27	35	108
26	93	151	347	102	88	115	404	142	61	26	52	102
27	69	127	440	95	95	170	318	129	59	26	35	93
28	67	114	300	86	107	127	282	131	56	26	41	88
29	64	103	228	80	---	110	285	129	54	26	58	97
30	59	95	185	74	---	102	264	123	52	24	72	102
31	111	---	153	72	---	105	---	155	---	23	54	---
TOTAL	1224	3092	4469	4197	2982	2812	6620	5064	3791	1117	768	1956
MEAN	39.5	103	144	135	107	90.7	221	163	126	36.0	24.8	65.2
MAX	111	190	440	642	264	170	428	264	261	51	72	127
MIN	22	51	65	56	50	62	112	123	52	23	15	32
CFSM	1.56	4.06	5.67	5.32	4.21	3.57	8.70	6.42	4.96	1.42	.98	2.57
IN.	1.79	4.53	6.54	6.15	4.37	4.12	9.70	7.42	5.55	1.64	1.12	2.86
AC-FT	2430	6130	8860	8320	5910	5580	13130	10040	7520	2220	1520	3880

CAL YR 1976 TOTAL 55755 MEAN 152 MAX 990 MIN 22 CFSM 5.98 IN 81.66 AC-FT 110600
WTR YR 1977 TOTAL 38092 MEAN 104 MAX 642 MIN 15 CFSM 4.09 IN 55.79 AC-FT 75560

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°22'13", long 121°37'26", in SE¼SW¼ sec.23, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 1.4 mi (2.3 km) upstream from Chester Morse Lake, 8.3 mi (13.4 km) southeast of Cedar Falls, and at mile 43.5 (70.0 km).

DRAINAGE AREA.--40.7 mi² (105.4 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P). 1955(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,560 ft (475 m), from topographic map. Prior to Oct. 26, 1957, at site 80 ft (24 m) downstream at same datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--32 years, 273 ft³/s (7.731 m³/s), 91.09 in/yr (2,314 mm/yr) 197,800 acre-ft/yr (244 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,490 ft³/s (269 m³/s) Nov. 22, 1959, gage height, 11.34 ft (3.456 m), from high-water mark in well, from rating curve extended above 4,300 ft³/s (122 m³/s), on basis of slope-area measurements at gage heights 10.16 ft (3.097 m) and 11.34 ft (3.456 m); maximum gage height, 11.4 ft (3.47 m) Feb. 11, 1951, backwater from Chester Morse Lake; minimum discharge, 20 ft³/s (0.57 m³/s) Nov. 30 to Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum(*):

Date	Time	Discharge (ft³/s)	(m³/s)	Gage height (ft)	(m)
Jan. 18	1400	*1,250	35.4	*5.76	1.756

Minimum discharge, 23 ft³/s (0.65 m³/s) Aug. 18, gage height, 1.96 ft (0.597 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	239	138	199	115	155	219	348	290	65	32	60
2	53	193	127	177	107	147	203	357	303	66	31	55
3	70	164	119	161	100	155	195	354	280	66	31	70
4	55	143	112	145	95	142	209	318	366	66	30	99
5	52	129	106	136	90	134	252	270	360	63	30	109
6	49	117	110	127	87	133	366	235	366	68	29	88
7	47	107	227	119	83	149	532	221	339	59	29	77
8	46	102	255	110	81	177	620	217	288	56	28	77
9	45	98	230	103	84	207	476	217	235	55	27	68
10	52	87	211	98	125	175	369	250	209	54	27	62
11	52	83	197	94	179	155	318	255	195	55	26	58
12	48	78	183	101	375	149	280	223	179	56	26	55
13	46	76	183	99	393	138	282	211	167	54	26	52
14	44	73	173	96	285	130	260	219	155	51	25	50
15	44	84	187	112	235	122	260	211	143	48	25	49
16	42	155	197	151	209	116	275	205	133	47	25	48
17	42	229	193	387	201	109	252	201	127	52	25	46
18	40	288	209	892	201	110	230	209	121	48	24	44
19	39	228	189	700	181	115	209	203	115	45	24	46
20	39	193	177	456	173	110	193	201	107	43	24	62
21	39	171	167	336	165	122	185	221	106	42	24	183
22	38	151	159	270	165	140	207	213	101	41	25	140
23	38	138	181	225	149	165	318	225	92	40	26	134
24	40	147	155	201	138	165	492	225	87	39	42	157
25	106	285	175	179	136	161	608	211	83	39	53	163
26	141	237	492	165	128	203	568	217	80	39	74	151
27	102	207	760	149	143	342	442	207	75	38	56	136
28	97	185	496	138	157	252	390	209	72	39	54	128
29	95	165	363	128	---	207	384	209	70	38	71	140
30	84	149	280	121	---	185	357	201	68	33	96	157
31	138	---	230	118	---	185	---	235	---	33	75	---
TOTAL	1874	4701	6979	6491	4580	4955	9951	7298	5312	1538	1140	2764
MEAN	60.5	157	225	209	164	160	332	235	177	49.6	36.8	92.1
MAX	141	288	760	892	393	342	620	357	366	68	96	183
MIN	38	73	104	94	81	109	185	201	68	33	24	44
CFSM	1.49	3.86	5.53	5.14	4.03	3.93	8.16	5.77	4.35	1.22	.90	2.26
IN.	1.71	4.30	6.38	5.93	4.19	4.53	9.10	6.67	4.86	1.41	1.04	2.53
AC-FT	3720	9320	13840	12870	9080	9830	19740	14480	10540	3050	2260	5480

CAL YR 1976 TOTAL 83573 MEAN 228 MAX 1650 MIN 38 CFSM 5.60 IN 76.39 AC-FT 165800
WTR YR 1977 TOTAL 57583 MEAN 158 MAX 892 MIN 24 CFSM 3.88 IN 52.63 AC-FT 114200

12115500 REX RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'03", long 121°39'43", in NE¼NW¼ sec.33, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 3.0 mi (4.8 km) upstream from mouth and Chester Morse Lake and 7.5 mi (12.1 km) southeast of Cedar Falls.

DRAINAGE AREA.--13.4 mi^2 (34.7 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M). WSP 1932: Drainage area. WRD Wash. 1974: 1973.

GAGE.--Water-stage recorder. Altitude of gage is 1,600 ft (488 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--32 years, 106 ft^3/s (3.002 m^3/s) (107.42 in/yr (2,728 mm/yr), 76,800 acre-ft/yr (94.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft^3/s (119 m^3/s) Nov. 22, 1959, gage height, 8.20 ft (2.499 m) from rating curve extended above 1,600 ft^3/s (45.3 m^3/s) on basis of contracted-opening measurement at gage height 7.19 ft (2.192 m) and slope-area measurement of peak flow; maximum gage height, 9.31 ft (2.838 m) Nov. 19, 1962, backwater from debris; minimum discharge, 4.3 ft^3/s (0.12 m^3/s) Nov. 29, 1952, gage height, 2.43 ft (0.741 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*788	22.3	*5.54	1.689

Minimum discharge, 7.2 ft^3/s (0.20 m^3/s) Aug. 17, 18, 19, gage height, 3.22 ft (0.981 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	123	51	64	37	57	72	125	109	18	9.5	39
2	21	84	46	55	33	52	62	125	118	18	9.5	37
3	24	68	43	51	31	51	65	130	102	18	8.7	52
4	16	58	39	46	30	47	77	113	138	18	8.7	90
5	15	51	36	41	29	46	109	98	113	16	8.7	65
6	15	45	46	39	28	47	174	92	104	18	8.7	52
7	14	41	152	37	27	54	256	94	90	16	8.3	46
8	13	39	118	35	26	62	248	94	77	15	8.3	46
9	13	37	96	33	29	67	162	92	65	15	7.9	38
10	23	34	86	32	72	58	118	107	59	15	7.9	33
11	20	31	77	31	90	51	113	100	52	16	7.9	30
12	16	29	67	38	216	47	100	86	49	18	7.9	27
13	15	27	72	34	149	44	111	82	44	16	7.9	26
14	14	27	64	33	104	40	90	94	40	15	7.5	24
15	13	37	80	72	82	38	107	88	38	14	7.5	23
16	13	128	72	130	72	36	118	90	34	13	7.5	22
17	12	147	79	280	70	35	96	90	32	21	7.5	21
18	12	120	88	461	65	34	82	90	30	16	7.2	20
19	12	98	72	272	57	34	72	80	28	14	7.5	23
20	12	77	65	158	55	34	65	77	27	13	7.5	58
21	11	67	61	111	51	45	70	86	27	12	7.5	130
22	11	58	61	86	50	57	130	73	27	12	7.5	80
23	11	52	72	70	45	65	188	82	25	12	12	92
24	16	88	58	62	41	58	256	96	23	12	26	118
25	125	202	100	55	40	54	272	80	22	11	33	96
26	84	116	344	49	39	100	248	88	21	11	51	75
27	54	90	356	45	61	165	181	79	20	10	30	64
28	57	73	191	41	62	96	158	90	19	11	52	59
29	51	64	128	39	---	68	147	90	19	11	61	67
30	44	57	96	37	---	58	133	79	18	10	79	62
31	92	---	77	37	---	61	---	102	---	10	50	---
TOTAL	864	2168	2993	2574	1691	1761	4080	2892	1570	445	571.1	1615
MEAN	27.9	72.3	96.5	83.0	60.4	56.8	136	93.3	52.3	14.4	18.4	53.8
MAX	125	202	356	461	216	165	272	130	138	21	79	130
MIN	11	27	36	31	26	34	62	73	18	10	7.2	20
CFSM	2.08	5.40	7.20	6.19	4.51	4.24	10.1	6.96	3.90	1.08	1.37	4.02
IN.	2.40	6.02	8.31	7.15	4.69	4.89	11.33	8.03	4.36	1.24	1.59	4.48
AC-FT	1710	4300	5940	5110	3350	3490	8090	5740	3110	883	1130	3200

CAL YR 1976 TOTAL 33473.0 MEAN 91.5 MAX 1160 MIN 11 CFSM 6.83 IN 92.93 AC-FT 66390
WTR YR 1977 TOTAL 23224.1 MEAN 63.6 MAX 461 MIN 7.2 CFSM 4.75 IN 64.47 AC-FT 46060

12116100 CANYON CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°23'11", long 121°43'55", in NW¼SE¼ sec.3, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 400 ft (122 m) upstream from mouth and 0.8 mi (1.3 km) east of Cedar Falls.

DRAINAGE AREA.--0.19 mi² (0.49 km²).

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 1,040 ft (317 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--32 years, 16.2 ft³/s (0.459 m³/s), 11,740 acre-ft/yr (14.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131 ft³/s (3.71 m³/s) Dec. 7, 1975, gage height, 2.22 ft (0.677 m); minimum, 0.3 ft³/s (0.008 m³/s) for many days during 1953-55, 1958 and 1961 water years, Oct. 28, 29, 1966, and Nov. 27, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21 ft³/s (0.59 m³/s) May 23, gage height, 1.18 ft (0.360 m); minimum, 0.48 ft³/s (0.014 m³/s), part or all of each day Dec. 5, 6, 11-22, 25, gage height, 0.58 ft (0.177 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	.64	.53	.70	3.3	3.4	3.6	16	20	16	6.0	2.9
2	1.9	.58	.53	.78	3.4	3.4	3.7	17	20	16	6.0	2.7
3	1.8	.58	.53	.86	3.4	3.5	4.0	18	20	15	5.7	2.7
4	1.6	.58	.53	1.1	3.4	3.4	4.2	18	20	15	5.7	2.7
5	1.5	.58	.53	1.2	3.4	3.4	4.4	18	20	14	5.4	2.7
6	1.5	.58	.48	1.3	3.4	3.4	4.7	18	20	14	5.7	2.5
7	1.3	.58	.53	1.5	3.4	3.4	4.9	19	20	14	5.4	2.5
8	1.3	.58	.53	1.6	3.4	3.3	5.2	19	20	13	5.0	2.5
9	1.2	.58	.53	1.8	3.3	3.4	5.5	19	20	13	5.0	2.5
10	1.2	.53	.53	1.8	3.2	3.2	5.8	19	20	13	4.7	2.3
11	1.2	.53	.48	1.8	3.1	3.1	6.3	19	20	12	4.7	2.3
12	1.1	.53	.48	1.9	3.1	3.1	6.9	19	20	12	4.4	2.3
13	1.1	.53	.48	1.9	3.1	3.1	7.4	19	20	11	4.4	2.3
14	.96	.53	.48	2.0	3.1	3.1	7.9	20	20	11	4.1	2.1
15	.96	.53	.48	2.1	3.1	3.1	8.5	20	20	10	4.1	2.1
16	.86	.53	.48	2.2	3.0	3.2	9.1	20	19	10	3.9	2.1
17	.78	.58	.48	2.3	2.9	3.2	9.6	20	19	9.6	3.9	2.1
18	.78	.53	.48	2.6	2.9	3.3	10	20	18	9.3	3.9	2.1
19	.78	.53	.48	2.4	2.9	3.4	11	20	18	8.9	3.6	2.3
20	.78	.53	.48	2.3	3.1	3.3	11	20	18	8.7	3.6	2.3
21	.70	.53	.48	2.3	3.1	3.3	13	20	18	8.4	3.6	2.5
22	.70	.53	.48	2.3	3.1	3.3	13	20	18	8.1	3.4	2.3
23	.70	.53	.70	2.5	3.1	3.4	13	20	18	8.0	3.4	2.3
24	.64	.53	.58	2.6	3.1	3.3	13	20	17	7.7	3.1	2.3
25	.70	.64	.53	2.8	3.2	3.3	14	20	17	7.4	3.1	2.3
26	.64	.58	.70	2.9	3.3	3.3	14	20	16	7.4	3.1	2.3
27	.64	.58	.64	3.0	3.4	3.4	14	20	16	7.0	2.9	2.1
28	.64	.53	.53	3.1	3.4	3.4	15	20	16	7.0	3.1	2.1
29	.58	.53	.53	3.1	---	3.3	15	20	16	6.7	3.1	2.1
30	.58	.53	.53	3.2	---	3.4	16	20	16	6.7	3.1	2.1
31	.64	---	.58	3.3	---	3.4	---	20	---	6.3	2.9	---
TOTAL	31.66	16.67	16.33	65.24	89.6	102.5	273.7	598	560	326.2	130.0	70.4
MEAN	1.02	.56	.53	2.10	3.20	3.31	9.12	19.3	18.7	10.5	4.19	2.35
MAX	1.9	.64	.70	3.3	3.4	3.5	16	20	20	16	6.0	2.9
MIN	.58	.53	.48	.70	2.9	3.1	3.6	16	16	6.3	2.9	2.1
AC-FT	63	33	32	129	178	203	543	1190	1110	647	258	140

CAL YR 1976 TOTAL 5895.06 MEAN 16.1 MAX 62 MIN .48 AC-FT 11690
WTR YR 1977 TOTAL 2280.30 MEAN 6.25 MAX 20 MIN .48 AC-FT 4520

12116500 CEDAR RIVER AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'02", long 121°47'27", in SW¼SE¼ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 0.5 mi (0.8 km) downstream from Seattle municipal powerplant at Cedar Falls, 4.0 mi (6.4 km) downstream from Chester Morse Lake, and at mile 33.2 (53.4 km).

DRAINAGE AREA.--84.2 mi² (218.1 km²).

PERIOD OF RECORD.--April 1914 to current year.

REVISED RECORDS.--WSP 722: 1930. WSP 1386: 1934(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 902.1 ft (274.96 m) above mean sea level.

REMARKS.--Records good. All artificially diverted water returned to river above station. Some regulation by Chester Morse Lake for power.

AVERAGE DISCHARGE.--63 years, 323 ft³/s (9.147 m³/s), 234,000 acre-ft/yr (289 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,860 ft³/s (194 m³/s) Dec. 3, 1975, gage height, 11.68 ft (3.560 m); no flow for part of Nov. 25, 1917, Aug. 18, 1923; minimum daily, 0.5 ft³/s (0.014 m³/s) Oct. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 724 ft³/s (20.5 m³/s) Jan. 18, gage height, 6.79 ft (2.070 m); minimum, 14 ft³/s (0.40 m³/s) Sept. 29, gage height, 4.53 ft (1.381 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	197	88	405	278	246	252	456	281	133	53	43
2	158	191	107	405	206	246	250	469	366	96	50	41
3	161	191	243	415	206	258	250	451	362	96	56	43
4	158	191	212	396	80	225	252	450	159	97	53	46
5	158	185	191	362	85	167	253	429	109	88	41	46
6	188	179	188	362	83	225	263	423	407	91	40	44
7	225	179	188	298	67	185	266	370	351	85	40	43
8	232	185	188	266	53	200	273	108	466	70	44	41
9	222	191	191	85	56	197	257	157	494	76	41	40
10	222	120	218	180	97	197	260	95	490	75	37	39
11	215	222	220	298	107	197	256	218	125	75	37	38
12	197	188	222	222	71	200	255	95	100	75	38	38
13	203	176	225	298	258	200	259	121	483	73	37	38
14	200	176	206	262	229	203	256	170	409	72	37	37
15	194	173	220	69	246	200	185	87	367	71	36	37
16	194	105	105	80	266	200	269	432	139	72	36	37
17	194	191	78	266	270	200	263	147	107	73	36	37
18	185	206	243	495	254	200	261	202	100	73	36	37
19	185	122	243	700	212	203	260	176	97	67	36	37
20	188	125	220	682	64	117	260	204	96	46	36	37
21	188	122	246	676	218	148	257	151	97	53	36	45
22	197	95	246	670	239	137	250	141	101	55	36	36
23	191	185	262	664	167	179	151	469	95	41	36	37
24	191	200	254	640	212	200	151	355	98	39	38	44
25	203	185	254	606	254	189	301	150	104	46	38	44
26	59	182	254	394	243	209	476	152	104	53	41	41
27	26	182	354	374	132	191	421	359	104	41	39	38
28	65	176	390	266	266	190	495	151	93	49	40	37
29	179	173	500	112	---	184	522	161	96	49	41	29
30	185	110	480	78	---	254	555	139	96	53	48	46
31	188	---	490	180	---	254	---	262	---	50	45	---
TOTAL	5509	5099	7545	11200	4919	6193	8688	7700	6502	2152	1264	1196
MEAN	178	170	243	361	176	200	290	248	217	69.4	40.8	39.9
MAX	232	222	500	700	278	258	555	469	494	133	56	46
MIN	26	95	78	69	53	117	151	87	93	39	36	29
CFSM	2.11	2.02	2.89	4.29	2.09	2.38	3.44	2.95	2.58	.82	.49	.47
IN.	2.43	2.25	3.33	4.95	2.17	2.74	3.84	3.40	2.87	.95	.56	.53
AC-FT	10930	10110	14970	22220	9760	12280	17230	15270	12900	4270	2510	2370

CAL YR 1976 TOTAL 115866 MEAN 317 MAX 2000 MIN 26 CFSM 3.77 IN 51.19 AC-FT 229800
WTR YR 1977 TOTAL 67967 MEAN 186 MAX 700 MIN 26 CFSM 2.21 IN 30.03 AC-FT 134800

12117000 TAYLOR CREEK NEAR SELLECK, WA

LOCATION.--Lat 47°23'12", long 121°50'42", in NW¼NW¼ sec.19, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 0.6 mi (1.0 km) upstream from mouth and 1.3 mi (2.1 km) northeast of Selleck.

DRAINAGE AREA.--17.2 mi² (44.5 km²).

PERIOD OF RECORD.--June to October 1945, August 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft (287 m), from topographic map. June to October 1945 on right bank 350 ft (107 km) downstream at different datum.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--21 years, 104 ft³/s (2.945 m³/s), 82.11 in/yr (2,086 mm/yr), 75,350 acre-ft/yr (92.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft³/s (77.3 m³/s) Jan. 29, 1965, gage height, 5.78 ft (1.762 m) from rating curve extended above 1,100 ft³/s (31.2 m³/s), on basis of slope-area measurement of peak flow; minimum, 16 ft³/s (0.45 m³/s) Oct. 2-7, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 379 ft³/s (10.7 m³/s) Jan. 18, gage height, 3.42 ft (1.042 m); minimum, 22 ft³/s (0.62 m³/s) part or all of each each Aug. 16-23, gage height, 1.84 ft (0.561 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	70	44	72	60	62	100	70	111	40	26	42
2	31	54	42	67	56	63	89	73	102	42	26	38
3	39	44	39	63	54	81	86	83	96	40	26	55
4	30	39	38	59	51	67	87	86	125	40	25	66
5	29	36	37	56	50	62	96	79	103	39	25	54
6	28	33	38	55	49	62	115	75	93	40	25	45
7	26	31	88	52	47	69	131	73	86	38	25	40
8	25	30	75	51	47	75	140	70	81	37	25	38
9	25	30	66	50	47	83	121	67	75	36	24	34
10	29	28	59	49	59	70	103	73	72	36	24	33
11	30	27	54	49	60	66	105	79	69	39	24	31
12	27	26	50	66	79	75	93	69	66	40	23	30
13	26	26	51	63	76	67	96	66	63	38	23	29
14	25	26	47	59	65	66	89	72	62	36	23	28
15	25	35	50	70	60	65	98	70	59	35	23	28
16	25	51	47	105	58	63	117	86	58	33	23	27
17	25	67	47	151	56	59	98	96	55	38	22	27
18	24	56	51	242	55	60	93	99	54	36	22	26
19	23	50	46	192	51	60	86	87	52	33	22	30
20	23	45	45	136	51	59	81	81	51	32	22	34
21	23	43	44	107	52	67	79	86	52	30	22	98
22	23	40	50	93	50	73	83	75	55	30	22	54
23	23	38	105	84	47	84	84	83	50	30	29	62
24	24	65	73	78	46	79	89	91	47	29	50	89
25	47	98	87	72	50	78	93	83	46	29	49	75
26	51	67	212	69	49	109	100	91	45	29	72	63
27	32	58	197	66	58	149	87	83	44	28	43	55
28	38	52	134	63	62	115	81	91	44	28	45	51
29	36	49	105	60	---	96	76	91	43	28	47	52
30	31	40	89	59	---	87	73	84	42	27	79	49
31	72	---	79	59	---	91	---	100	---	26	52	---
TOTAL	941	1348	2187	2517	1545	2362	2869	2508	2001	1062	988	1383
MEAN	30.4	44.9	70.5	81.2	55.2	76.2	95.6	80.9	66.7	34.3	31.9	46.1
MAX	72	98	212	242	79	149	140	100	125	42	79	98
MIN	23	26	37	49	46	59	73	66	42	26	22	26
CFSM	1.77	2.61	4.10	4.72	3.21	4.43	5.56	4.70	3.88	1.99	1.86	2.68
IN.	2.04	2.92	4.73	5.44	3.34	5.11	6.20	5.42	4.33	2.30	2.14	2.99
AC-FT	1870	2670	4340	4990	3060	4690	5690	4970	3970	2110	1960	2740

CAL YR 1976 TOTAL 32123 MEAN 87.8 MAX 584 MIN 23 CFSM 5.11 IN 69.48 AC-FT 63720
WTR YR 1977 TOTAL 21711 MEAN 59.5 MAX 242 MIN 22 CFSM 3.46 IN 46.95 AC-FT 43060

12117500 CEDAR RIVER NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'30", long 121°57'12", on west line NW¼SW¼ sec.17, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 1.8 mi (2.9 km) upstream from intake of Seattle water-supply system near Landsburg, 4.0 mi (6.4 km) east of Maple Valley, 5.9 mi (9.5 km) downstream from Taylor Creek, and at mile 23.4 (37.7 km).

DRAINAGE AREA.--121 mi² (313 km²) revised, excludes Walsh Lake diversion which enters Cedar River at mile 19.5 (31.4 km), and excludes 1.9 mi² (4.9 km²) of Walsh Lake drainage in Cedar River basin normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1895 to current year (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

REVISED RECORDS.--WSP 313: 1895-98, 1902-9. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M). WSP 1736: 1960. WSP 1932: 1947, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.9 ft (172.49 m) above mean sea level. Prior to Oct. 1, 1898 nonrecording gage at site 2.2 mi (3.5 km) downstream at different datum. Mar. 24, 1901, to May 15, 1913, nonrecording gage at site 2 mi (3.2 km) downstream at datum 535.84 ft (163.324 m) above mean sea level (levels by city of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder 0.2 mi (0.3 km) downstream at different datum.

REMARKS.--Water discharge records good. All diversions except Rock Creek returned to river above station. Rock Creek, a tributary which entered naturally just above station prior to 1932, is diverted during summer months to enter river at a point about 3.9 mi (6.3 km) below station. Some regulation by Chester Morse Lake and Masonry Dam, 12.2 mi (19.6 km) upstream.

AVERAGE DISCHARGE.--82 years, 700 ft³/s (19.82 m³/s) 507,200 acre-ft/yr (625 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s (402 m³/s) Nov. 19, 1911, gage height, 10.0 ft (3.05 m), from graph based on gage readings, site and datum then in use, by computation of peak flow over dam, peak caused by failure of flashboards at Chester Morse Lake; minimum observed, 83 ft³/s (2.35 m³/s) Sept. 19, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,250 ft³/s (35.4 m³/s) Jan. 18, gage height, 2.76 ft (0.841 m); minimum 224 ft³/s (6.34 m³/s) Sept. 16, 17, 18, 19; minimum gage height, 0.97 ft (0.296 m) Nov. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	406	446	301	733	557	467	567	777	800	401	277	264
2	413	440	311	726	422	483	547	755	754	367	277	258
3	435	420	435	668	412	557	539	756	751	363	277	277
4	411	409	415	619	310	500	539	751	575	363	277	301
5	405	400	383	600	298	403	566	734	511	363	261	264
6	417	388	381	578	297	465	572	715	711	363	250	264
7	464	384	480	532	284	444	590	668	700	346	244	255
8	457	385	468	478	266	467	619	407	765	342	258	251
9	456	389	429	332	264	478	586	439	846	335	255	245
10	459	367	439	361	305	459	567	401	806	335	251	242
11	457	412	447	491	333	450	566	511	530	339	248	239
12	433	388	433	478	333	480	549	398	437	339	248	236
13	429	357	437	549	454	468	556	402	733	335	245	233
14	430	359	419	522	446	466	565	440	770	331	245	230
15	421	374	437	331	460	463	490	405	675	327	242	227
16	414	350	354	371	474	456	595	661	447	320	242	227
17	414	429	256	596	478	455	574	554	419	331	239	224
18	407	442	451	879	476	451	558	522	401	327	239	224
19	397	363	443	1110	457	455	546	465	392	316	239	230
20	400	366	429	1010	291	384	540	508	388	298	236	236
21	396	335	443	965	405	401	534	479	392	291	236	410
22	405	313	453	937	437	489	538	456	396	294	236	264
23	396	366	599	923	400	451	441	728	388	284	245	291
24	397	423	527	895	367	482	438	772	375	277	267	350
25	432	492	532	688	464	463	582	483	370	277	280	320
26	386	440	706	625	446	524	765	503	370	287	327	294
27	258	417	750	617	392	578	720	654	375	277	277	274
28	269	401	727	506	476	531	759	534	367	277	274	261
29	398	389	795	374	---	503	778	525	367	280	277	255
30	393	336	752	311	---	557	798	473	363	280	335	258
31	447	---	744	351	---	553	---	599	---	280	287	---
TOTAL	12722	11780	15156	19136	11004	14705	17544	17475	16087	9945	8139	7944
MEAN	410	393	489	617	393	474	585	564	536	321	263	265
MAX	464	492	795	1110	557	578	798	777	846	401	335	410
MIN	258	313	256	311	264	384	438	398	363	277	236	224
AC-FT	25230	23370	30060	37960	21830	29170	34800	34660	31910	19730	16140	15760

CAL YR 1976 TOTAL 245470 MEAN 671 MAX 3120 MIN 256 AC-FT 486900
WTR YR 1977 TOTAL 161637 MEAN 443 MAX 1110 MIN 224 AC-FT 320600

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1953 to current year.

INSTRUMENTATION.--Temperature recorder since August 1953.

REMARKS.--Temperature recorder clock stopped Sept. 24-30 (range in temperature 8.0°C to 9.0°C).

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 19.5°C July 27, 28, 1960, July 13, 1961; minimum, 2.0°C on several days during winter of 1956, 1957,1960, 1971 and 1975.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 14.5°C July 7, Aug. 3; minimum, 3.5°C Jan. 12, 26-29.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	11.5	11.5	9.0	9.0	9.0	6.5	6.0	6.5	5.0	5.0	5.0
2	11.5	11.5	11.5	9.0	9.0	9.0	6.5	6.0	6.5	5.0	4.5	4.5
3	11.5	11.0	11.0	9.0	9.0	9.0	6.5	6.0	6.5	4.5	4.5	4.5
4	11.0	10.5	11.0	9.0	9.0	9.0	6.5	6.5	6.5	4.5	4.5	4.5
5	11.0	11.0	11.0	9.0	8.5	9.0	6.5	6.5	6.5	4.5	4.0	4.5
6	11.0	11.0	11.0	8.5	8.5	8.5	6.5	6.5	6.5	4.0	4.0	4.0
7	11.5	11.0	11.0	8.5	8.5	8.5	6.5	6.5	6.5	4.0	4.0	4.0
8	11.5	11.0	11.0	8.5	8.5	8.5	6.5	6.5	6.5	4.0	4.0	4.0
9	11.5	11.5	11.5	8.5	8.5	8.5	6.5	6.5	6.5	4.0	4.0	4.0
10	11.5	11.5	11.5	8.5	8.5	8.5	6.5	6.5	6.5	4.0	4.0	4.0
11	11.5	11.0	11.0	8.5	8.5	8.5	6.5	6.5	6.5	5.0	4.0	4.5
12	11.0	10.5	11.0	8.5	8.0	8.0	6.5	6.5	6.5	4.0	3.5	3.5
13	10.5	10.5	10.5	8.0	8.0	8.0	6.5	6.5	6.5	4.0	4.0	4.0
14	10.5	10.5	10.5	8.0	8.0	8.0	6.5	6.5	6.5	4.0	4.0	4.0
15	10.5	10.0	10.0	8.0	8.0	8.0	6.5	6.5	6.5	5.0	4.0	4.5
16	10.0	10.0	10.0	8.0	8.0	8.0	6.5	6.5	6.5	5.0	5.0	5.0
17	10.0	9.5	10.0	8.0	8.0	8.0	6.5	6.5	6.5	5.0	4.5	4.5
18	9.5	9.5	9.5	8.0	8.0	8.0	6.5	6.5	6.5	5.5	4.5	5.0
19	9.5	9.0	9.0	8.0	8.0	8.0	6.5	6.5	6.5	4.5	4.5	4.5
20	9.0	9.0	9.0	8.0	8.0	8.0	6.5	6.0	6.5	4.5	4.5	4.5
21	9.5	9.0	9.0	8.0	8.0	8.0	6.0	6.0	6.0	4.5	4.5	4.5
22	9.5	9.0	9.0	8.0	8.0	8.0	6.0	6.0	6.0	4.5	4.5	4.5
23	9.5	9.5	9.5	8.0	8.0	8.0	6.0	5.5	5.5	4.5	4.0	4.5
24	9.5	9.5	9.5	8.0	8.0	8.0	5.5	5.5	5.5	4.0	4.0	4.0
25	9.5	9.5	9.5	8.0	8.0	8.0	5.5	5.5	5.5	4.0	4.0	4.0
26	9.5	9.0	9.0	8.0	7.0	8.0	5.5	5.5	5.5	4.0	3.5	3.5
27	9.0	9.0	9.0	7.0	6.5	6.5	5.5	5.5	5.5	4.0	3.5	3.5
28	9.0	9.0	9.0	7.0	6.5	6.5	5.5	5.5	5.5	4.0	3.5	3.5
29	9.0	9.0	9.0	6.5	6.0	6.5	5.5	5.5	5.5	4.0	3.5	3.5
30	9.0	9.0	9.0	6.0	6.0	6.0	5.5	5.5	5.5	4.5	4.0	4.5
31	9.0	9.0	9.0	---	---	---	5.5	5.0	5.5	4.5	4.0	4.5
MONTH	11.5	9.0	10.0	9.0	6.0	8.0	6.5	5.0	6.0	5.5	3.5	4.0

LAKE WASHINGTON BASIN

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.0	6.5	5.5	5.5	5.5	6.0	6.0	6.0	9.0	8.5	9.0
2	6.5	6.0	6.5	5.5	5.5	5.5	6.5	6.0	6.5	9.0	9.0	9.0
3	6.5	6.0	6.5	5.5	5.0	5.5	6.5	6.5	6.5	9.0	8.0	9.0
4	5.0	6.0	6.5	5.5	5.0	5.5	7.0	6.5	6.5	9.0	8.5	9.0
5	6.5	6.5	6.5	6.0	5.0	5.5	8.0	6.5	7.0	8.5	8.5	8.5
6	5.0	6.5	6.5	6.0	5.5	5.5	8.0	7.0	8.0	9.0	8.5	9.0
7	5.0	6.5	6.5	6.0	5.5	5.5	8.5	7.0	8.0	9.0	8.5	9.0
8	5.5	5.0	5.5	6.0	5.5	5.5	8.0	8.0	8.0	9.0	8.5	9.0
9	5.5	5.0	5.5	5.5	5.5	5.5	8.0	7.0	8.0	10.5	8.5	9.5
10	5.5	5.5	5.5	5.5	5.5	5.5	7.0	7.0	7.0	9.5	8.5	9.0
11	5.5	5.0	5.5	5.5	5.5	5.5	8.0	7.0	8.0	9.0	8.5	9.0
12	5.5	5.0	5.5	5.5	5.0	5.5	8.0	6.5	7.0	10.0	8.0	9.0
13	5.5	5.0	5.5	5.5	5.0	5.5	8.0	7.0	8.0	9.5	8.5	9.0
14	5.0	5.0	5.0	5.5	5.5	5.5	7.0	7.0	7.0	9.0	8.5	9.0
15	5.0	5.0	5.0	5.5	5.5	5.5	7.0	7.0	7.0	9.5	8.5	9.0
16	5.0	5.0	5.0	5.5	5.5	5.5	7.0	7.0	7.0	9.0	8.5	9.0
17	5.5	5.0	5.5	5.5	5.5	5.5	8.0	6.5	7.0	9.5	8.5	8.5
18	5.5	5.5	5.5	5.5	5.5	5.5	7.0	6.5	6.5	9.0	8.5	9.0
19	5.5	5.0	5.5	5.5	5.5	5.5	7.0	6.5	6.5	10.0	8.5	9.0
20	6.0	5.0	5.5	5.5	5.5	5.5	8.0	6.5	7.0	10.0	9.0	9.5
21	6.0	5.5	5.5	6.0	5.5	5.5	7.0	7.0	7.0	10.0	9.5	10.0
22	5.5	5.5	5.5	6.5	5.5	6.0	9.0	7.0	8.0	10.5	9.5	10.0
23	6.0	5.5	5.5	6.5	6.0	6.5	8.5	8.0	8.0	10.0	9.5	10.0
24	6.0	5.5	5.5	6.5	6.0	6.5	9.5	8.0	9.0	10.0	9.5	10.0
25	6.0	5.5	5.5	6.5	6.0	6.5	9.0	8.0	8.5	10.5	9.0	10.0
26	6.0	5.5	5.5	6.0	6.0	6.0	8.0	8.0	8.0	10.0	9.5	10.0
27	6.5	5.5	6.0	6.0	6.0	6.0	9.0	8.0	8.5	10.0	9.0	9.5
28	6.5	5.5	5.5	6.0	5.5	5.5	8.5	8.0	8.0	10.0	9.5	10.0
29	---	---	---	6.0	5.5	5.5	8.5	8.5	8.5	10.0	9.5	10.0
30	---	---	---	6.0	5.5	5.5	9.0	8.5	9.0	10.0	9.0	9.5
31	---	---	---	6.0	6.0	6.0	---	---	---	10.0	9.5	10.0
MONTH	6.5	6.0	5.0	6.5	5.0	5.5	9.5	6.0	7.5	10.5	8.0	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.0	10.0	10.0	13.5	12.0	13.0	14.0	12.0	13.5	10.5	10.0	10.0
2	10.5	9.5	10.0	13.0	11.5	12.0	14.0	12.0	13.5	10.5	10.0	10.0
3	11.0	10.0	10.5	12.0	11.5	12.0	14.5	12.0	13.5	10.5	10.0	10.0
4	10.5	10.5	10.5	12.0	11.5	12.0	13.5	11.5	13.0	11.0	10.5	11.0
5	13.0	10.0	11.0	12.0	11.5	12.0	13.5	11.5	13.0	11.0	10.5	11.0
6	12.0	11.0	11.5	13.5	11.5	12.0	13.5	11.5	13.0	10.5	9.5	10.0
7	12.0	11.0	11.5	14.5	11.5	13.5	13.5	11.5	13.0	10.5	9.5	10.0
8	12.0	11.0	11.5	14.0	12.0	13.5	13.5	11.5	13.0	10.5	9.5	10.0
9	12.0	11.0	11.5	13.0	12.0	12.0	13.5	11.0	12.5	10.5	9.5	10.0
10	12.0	10.5	11.0	13.5	12.0	13.0	13.5	11.5	13.0	10.5	9.5	10.0
11	12.0	11.0	11.5	13.0	12.0	12.0	13.5	11.5	13.0	10.5	9.5	10.0
12	11.5	11.0	11.0	12.0	12.0	12.0	13.5	11.5	13.0	10.5	9.5	10.0
13	12.0	10.5	11.0	13.0	12.0	12.0	13.5	11.5	13.0	10.5	9.5	10.0
14	12.0	11.0	11.5	13.5	12.0	13.0	13.0	11.0	11.5	10.0	10.0	10.0
15	12.0	11.0	11.5	14.0	12.0	13.5	13.0	11.0	11.5	10.0	10.0	10.0
16	13.5	11.0	12.0	13.0	12.0	12.0	13.0	11.5	12.5	10.0	9.5	10.0
17	14.0	11.5	13.0	12.0	12.0	12.0	13.0	11.5	12.5	10.0	9.5	10.0
18	12.0	11.5	12.0	13.5	11.5	12.0	13.0	11.5	12.5	10.0	9.5	10.0
19	12.0	11.5	12.0	14.0	11.5	13.0	12.5	11.5	11.5	9.5	9.5	9.5
20	12.0	11.5	12.0	13.5	11.5	12.0	11.5	11.0	11.5	9.0	9.0	9.0
21	11.5	11.5	11.5	13.0	11.5	12.0	11.5	11.0	11.5	9.0	9.0	9.0
22	13.0	11.5	12.0	13.5	11.0	12.0	11.0	11.0	11.0	9.0	8.5	8.5
23	13.5	11.0	12.0	13.5	11.0	12.0	11.0	11.0	11.0	9.0	9.0	9.0
24	13.5	11.5	12.0	13.5	11.5	12.0	11.0	11.0	11.0	---	---	---
25	13.5	12.0	13.0	13.0	11.5	12.0	11.0	11.0	11.0	---	---	---
26	13.5	12.0	13.0	13.0	11.5	12.0	11.0	11.0	11.0	---	---	---
27	13.5	12.0	13.0	14.0	11.5	13.0	10.5	10.5	10.5	---	---	---
28	13.0	11.5	12.0	13.0	11.5	12.0	10.5	10.5	10.5	---	---	---
29	13.5	11.5	12.0	13.0	11.5	12.0	10.5	10.5	10.5	---	---	---
30	14.0	11.5	13.0	14.0	11.5	13.0	10.5	10.5	10.5	---	---	---
31	---	---	---	14.0	12.0	13.5	10.5	10.0	10.0	---	---	---
MONTH	14.0	9.5	11.5	14.5	11.0	12.5	14.5	10.0	12.0	11.0	8.5	10.0
YEAR	14.5	3.5	8.5									

12116510 CEDAR RIVER AT MAPLE VALLEY, WA

LOCATION.--Lat 47°24'22", long 122°02'18", in NE¼SE¼ sec.9, T.22 N., R.6 E., King County, Hydrologic Unit 17110012, at U.S. Highway 5 bridge in Maple Valley.

DRAINAGE AREA.--151 mi² (391 km²).

PERIOD OF RECORD.--Water years 1973, Aug. 3 to Aug. 4, 1977 (discontinued).

COOPERATION.--Coliform analyses were performed by the Washington State Department of Ecology.

WATER-QUALITY DATA AUGUST 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM, .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
03...	1005	76	76	7.6	14.9	0	10.1	101	B400	70	34
03...	1315	73	73	7.7	16.7	--	9.8	100	--	--	--
03...	1703	72	75	7.7	19.3	0	9.3	101	B300	66	--
03...	2020	71	75	7.7	18.0	--	9.0	96	--	--	--
03...	2300	70	76	7.6	16.6	0	9.1	94	B800	B190	--
04...	0200	69	76	7.5	15.3	--	9.2	92	--	--	--
04...	0435	68	76	7.5	14.6	3	9.5	94	B300	80	--
04...	0730	67	76	7.5	14.2	--	9.7	95	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
03...	0	11	1.7	2.7	.6	42	0	34	1.7	5.0
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	41	0	34	1.3	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
03...	2.4	.0	12	57	35	.15	.02	.15	.01	.01
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	76	.16	.02	.16	.01	.00
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12119000 CEDAR RIVER AT RENTON, WA

LOCATION.--Lat 47°28'58", long 122°12'08", in SW¼NW¼ sec.17, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 125 ft (38 m) downstream from bridge on Mill Avenue at Renton and at mile 1.6 (2.6 km).

DRAINAGE AREA.--184 mi² (477 km²) revised, includes 3.67 mi² (9.51 km²) in vicinity of Youngs Lake in Big Soos Creek basin, excludes 1.9 mi² (4.9 km²) from upper Rock Creek, Cedar River basin, normally diverted into Issaquah Creek.

PERIOD OF RECORD.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to current year. Chemical analyses July 1959 to September 1971, water temperatures August 1965 to February 1967.

REVISED RECORDS.--WSP 1316: 1901-2. WSP 1932: Drainage area. WDR WA-75-1: 1972-1974.

GAGE.--Water-stage recorder. Datum of gage is 15.20 ft (4.633 m) above mean sea level. Prior to Jan. 1, 1908, nonrecording gages within 1 mi (1.6 km) of present site, at datum 10.67 ft (3.252 m) below mean sea level, unadjusted. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft (213 m) upstream at datum 20.13 ft (6.136 m) above mean sea level and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft (5.831 m) above mean sea level.

REMARKS.--Records good. Flow partly regulated by Chester Morse Lake for operation of powerplant at Cedar Falls 32.1 mi (51.6 km) upstream from gage. An average daily discharge of about 148 cfs (4.19 m³/s) was diverted during the year at Landsburg by the city of Seattle for municipal use.

AVERAGE DISCHARGE.--32 years (water years, 1946-77), 706 ft³/s (19.99 m³/s), 511,500 acre-ft/yr (631 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft³/s (249 m³/s), Dec. 4, 1975, gage height, 14.14 ft (4.310 m) from outside high-water mark; minimum daily, 30 ft³/s (0.85 m³/s) July 1, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,340 ft³/s (37.9 m³/s) Jan. 18, gage height, 8.50 ft (2.591 m); minimum, 81 ft³/s (2.29 m³/s) Aug. 18, 19, gage height, 6.08 ft (1.853 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	332	450	385	562	538	420	526	779	751	240	104	187
2	345	370	380	544	460	400	502	718	744	228	95	182
3	380	345	405	490	425	538	485	718	807	216	95	209
4	350	355	420	514	400	465	480	712	700	209	95	237
5	324	380	420	538	405	430	480	658	556	199	93	239
6	320	445	415	496	395	400	485	634	574	209	93	214
7	332	445	485	490	390	455	502	658	628	185	93	208
8	320	445	430	475	355	415	538	480	682	174	94	179
9	324	450	390	425	345	425	520	380	765	147	89	169
10	328	430	355	380	370	460	490	490	724	141	87	163
11	328	425	395	407	380	430	490	410	622	138	89	159
12	308	440	385	460	380	445	455	415	380	153	89	155
13	324	425	385	502	390	440	455	365	485	150	88	167
14	328	425	375	445	365	445	460	365	712	188	88	165
15	324	440	395	435	360	460	470	415	604	185	87	168
16	320	445	380	465	350	440	514	455	514	188	87	171
17	316	440	340	616	355	415	496	628	390	192	86	175
18	316	455	395	793	365	395	480	450	360	195	83	177
19	316	410	370	1210	380	400	490	435	360	192	84	189
20	320	395	365	980	365	415	496	430	355	158	86	191
21	324	405	370	800	375	455	480	460	355	135	87	345
22	340	395	375	758	385	390	465	440	345	113	87	272
23	370	400	550	730	375	390	435	550	345	107	116	249
24	385	435	475	712	360	385	390	814	375	105	161	326
25	380	475	450	664	385	430	450	514	292	107	145	309
26	390	435	640	496	390	490	640	470	276	116	212	273
27	328	410	821	496	360	574	706	526	268	114	148	241
28	345	400	634	514	410	502	694	664	264	102	121	225
29	425	395	658	502	---	465	730	538	260	111	162	232
30	345	395	610	430	---	480	779	480	244	100	231	216
31	390	---	586	430	---	502	---	592	---	102	220	---
TOTAL	10577	12560	14039	17759	10813	13756	15583	16623	14737	4899	3493	6392
MEAN	341	419	453	573	386	444	519	536	491	158	113	213
MAX	425	475	821	1210	538	574	779	814	807	240	231	345
MIN	308	345	340	380	345	385	390	345	244	100	83	155
AC-FT	20980	24910	27850	35220	21450	27290	30910	32970	29230	9720	6930	12680

CAL YR 1976 TOTAL 234231 MEAN 640 MAX 2980 MIN 112 AC-FT 464600
WTR YR 1977 TOTAL 141231 MEAN 387 MAX 1210 MIN 83 AC-FT 280100

12119007 CEDAR RIVER AT LOGAN STREET AT RENTON, WA

LOCATION.--Lat 47°29'09", long 122°12'28", in NE¼NE¼ sec.18, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, at Logan Avenue bridge near mouth, 0.2 mi (0.3 km) downstream from gaging station at Renton and at mile 1.0 (1.6 km).

PERIOD OF RECORD.--Water years 1976, Aug. 3 to Aug. 4, 1977.

COOPERATION.--Coliform analyses were performed by the Washington State Department of Ecology.

WATER QUALITY DATA AUGUST 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
03...	0900	92	90	7.6	17.0	1	10.1	104	>100	42	39
03...	1230	92	95	7.8	21.2	--	10.0	112	--	--	--
03...	1605	98	96	8.6	23.6	0	10.0	117	B500	B130	--
03...	1945	102	96	8.0	21.2	--	8.9	100	--	--	--
03...	2215	98	94	7.7	20.5	0	8.1	90	B1200	260	--
04...	0115	98	91	7.6	18.8	--	8.3	89	--	--	--
04...	0400	95	90	7.6	17.8	0	8.6	90	B830	130	--
04...	0650	94	93	7.7	17.0	--	9.0	93	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
03...	0	11	2.8	4.1	.7	50	0	41	2.0	5.6
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	48	0	39	.2	--
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
03...	2.4	.1	15	66	17	.20	.24	.34	.02	.00
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	5	.14	.04	.16	.02	.01
03...	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

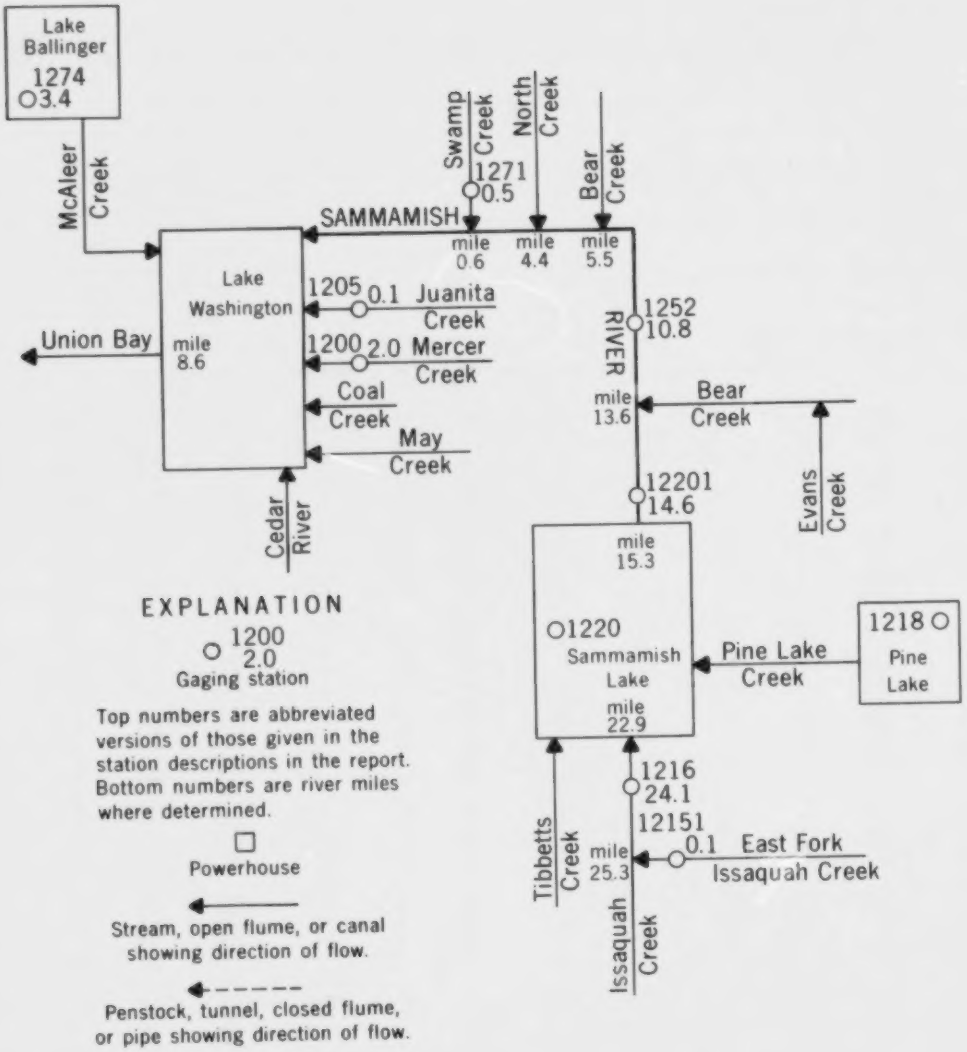
Lake Ballinger
1274
3.4
McAleer Creek
Swamp Creek
1271
0.5
North Creek
Bear Creek
SAMMAMISH
mile 0.6
mile 4.4
mile 5.5
Lake Washington
mile 8.6
Union Bay
1205
0.1
Juanita Creek
1200
2.0
Mercer Creek
Coal Creek
May Creek
Cedar River
1252
10.8
RIVER
mile 13.6
Bear Creek
Evans Creek
12201
14.6
mile 15.3
1220
Sammamish Lake
mile 22.9
Pine Lake Creek
1218
Pine Lake
1216
24.1
12151
mile 25.3
0.1
East Fork Issaquah Creek
Tibbetts Creek
Issaquah Creek
EXPLANATION
1200
2.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 14. Gaging stations in Lake Washington basin (below Cedar River).

12120000 MERCER CREEK NEAR BELLEVUE, WA

LOCATION.--Lat 47°36'11", long 122°10'47", in NW¼NW¼ sec.4, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 40 ft (12 m) upstream from Northern Pacific Railway trestle, 1.2 mi (1.9 km) southeast of Bellevue, and 2.0 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--12.0 mi² (31.1 km²)

PERIOD OF RECORD.--June to October 1945, June 1955 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 17.11 ft (5.215 m) above mean sea level (levels by Municipality of Metropolitan Seattle engineers). Prior to June 5, 1959, at site 600 ft (183 m) downstream at different datums.

REMARKS.--Records fair. Some small diversions for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--22 years, 22.3 ft³/s (0.632 m³/s), 25.24 in/yr (641 mm/yr), 16,160 acre-ft/yr (19.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 402 ft³/s (11.4 m³/s) Mar. 6, 1972, gage height, 8.68 ft (2.646 m), from high-water mark in well, from rating curve extended above 180 ft³/s (5.10 m³/s) on basis of computation of peak flow through culvert; minimum, 1.9 ft³/s (0.054 m³/s) Aug. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 170 ft³/s (4.81 m³/s) and maximum (*) from peak-stage indicator:

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
Mar. 9	unknown	*216	6.12	*3.44	1.049	Aug. 26	0730	205	5.81	3.33	1.015

Minimum discharge, 5.3 ft³/s (0.15 m³/s) June 26, Aug. 18; minimum gage height, 0.26 ft (0.079 m) Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	19	9.2	11	14	60	15	9.2	43	7.6	6.7	12
2	14	13	8.6	13	11	36	12	22	18	7.6	7.0	14
3	12	11	9.2	12	10	74	11	34	17	9.2	7.0	17
4	8.3	11	8.6	10	9.9	33	11	14	34	26	6.7	26
5	8.6	10	8.6	9.0	9.6	24	11	16	17	10	6.7	13
6	8.3	9.6	9.2	8.5	9.9	23	11	12	13	8.3	7.0	11
7	8.0	9.2	22	8.0	9.6	62	11	13	11	7.6	6.6	12
8	8.3	9.2	13	7.8	9.6	75	14	14	9.9	7.3	6.8	15
9	8.3	9.2	11	7.7	9.2	120	11	11	9.2	7.3	6.2	10
10	8.6	9.2	11	7.6	34	46	11	23	8.6	7.0	6.2	9.9
11	11	9.2	11	15	18	35	11	26	8.3	8.6	6.2	9.6
12	8.9	8.6	11	32	18	33	11	13	8.3	20	6.1	9.2
13	8.6	8.6	16	23	14	22	38	12	8.3	11	6.4	8.9
14	8.3	8.3	12	19	13	21	27	11	8.3	8.0	5.8	8.9
15	8.3	8.9	15	22	12	23	20	10	8.0	8.0	6.1	9.6
16	8.0	10	12	27	12	22	21	17	7.6	8.0	6.1	8.6
17	7.6	21	17	38	12	17	14	12	7.6	8.3	6.1	8.3
18	7.3	13	13	58	11	15	13	10	7.0	7.6	5.6	9.2
19	7.6	12	11	25	11	18	12	9.9	7.0	7.6	6.4	17
20	7.6	11	11	18	14	14	12	8.9	7.3	8.0	6.4	13
21	7.6	12	9.9	15	16	13	12	9.6	7.3	7.3	6.4	40
22	6.7	11	13	13	13	16	12	8.3	7.3	7.0	6.7	13
23	7.0	9.6	82	12	12	28	11	26	6.7	7.0	34	33
24	12	11	24	11	11	20	11	23	6.7	7.0	66	17
25	11	19	23	10	16	16	10	12	6.7	7.0	86	21
26	9.6	11	48	9.7	15	14	16	25	6.4	7.0	95	15
27	7.6	9.9	20	9.4	14	16	10	26	7.6	7.6	22	12
28	46	9.2	15	9.2	41	13	9.2	20	7.0	7.3	16	13
29	19	8.9	14	9.0	---	12	8.9	14	7.0	7.0	15	20
30	11	8.9	12	8.8	---	12	8.6	11	6.7	6.7	26	14
31	45	---	11	14	---	13	---	66	---	7.0	13	---
TOTAL	350.7	331.5	511.3	492.7	399.8	946	405.7	538.9	327.8	270.9	514.2	439.2
MEAN	11.6	11.1	16.5	15.9	14.3	30.5	13.5	17.4	10.9	8.74	16.6	14.6
MAX	46	21	82	58	41	120	38	66	43	26	95	40
MIN	6.7	8.3	8.6	7.6	9.2	12	8.6	8.3	6.4	6.7	5.6	8.3
CFSM	.97	.93	1.38	1.33	1.19	2.54	1.13	1.45	.91	.73	1.38	1.22
IN.	1.11	1.03	1.58	1.53	1.24	2.93	1.26	1.67	1.02	.84	1.59	1.36
AC-FT	711	658	1010	977	793	1880	805	1070	650	537	1020	871

CAL YR 1976 TOTAL 7053.2 MEAN 19.3 MAX 98 MIN 6.7 CFSM 1.61 IN 21.86 AC-FT 13990
WTR YR 1977 TOTAL 5536.7 MEAN 15.2 MAX 120 MIN 5.6 CFSM 1.27 IN 17.16 AC-FT 10980

NOTE.--No gage-height record Mar. 3-11.

12120500 JUANITA CREEK NEAR KIRKLAND, WA

LOCATION.--Lat 47°42'20", long 122°12'56", in SW¼SE¼ sec.30, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 0.1 mi (0.2 km) upstream from mouth and Lake Washington, and 1.7 mi (2.7 km) north of Kirkland.

DRAINAGE AREA.--6.69 mi² (17.33 km²). Prior to May 3, 1972, 6.43 mi² (16.65 km²).

PERIOD OF RECORD.--June to October 1945, September 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Recording gage. Altitude of gage is 20 ft (6 m), from topographic map. Prior to Oct. 2, 1945, water-stage recorder at site 1,500 ft (457 m) upstream at different datum. Sept. 1, 1963 to May 2, 1972, water-stage recorder and concrete control at site 1,000 ft (305 m) upstream at different datum. May 3, 1972 to Oct. 27, 1972 nonrecording gage at present site and different datum.

REMARKS.--Records fair. No known regulation. Probably several small diversions above station for domestic use.

AVERAGE DISCHARGE.--12 years (water years 1964-72, 1975-77) 10.6 ft³/s (0.300 m³/s), 21.52 in/yr (547 mm/yr), 7,680 acre-ft/yr (9.47 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 257 ft³/s (7.28 m³/s) Dec. 4, 1975; maximum gage height, 5.09 ft (1.551 m), Dec. 15, 1973, backwater from debris; minimum discharge, 0.58 ft³/s (0.016 m³/s) Sept. 15, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 121 ft³/s (3.43 m³/s) Mar. 8, gage height, 2.66 ft (0.811 m); maximum gage height, 3.41 ft (1.039 m), Aug. 25, backwater from debris; minimum daily discharge, 2.4 ft³/s (0.068 m³/s) July 22, July 28 to Aug. 1, Aug. 4, 5, 7, 9-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	4.6	3.6	4.6	6.2	21	9.4	5.1	14	2.9	2.4	6.9
2	4.8	4.9	3.6	5.1	5.6	20	8.6	9.1	7.4	3.1	2.5	8.8
3	3.8	4.4	3.6	4.6	5.1	37	8.3	18	7.7	5.4	2.5	7.1
4	3.3	4.4	3.6	4.4	4.9	17	8.0	8.1	13	5.1	2.4	19
5	3.5	4.4	3.6	4.2	4.9	13	7.5	8.7	7.1	4.1	2.4	6.8
6	3.3	4.4	4.6	4.0	4.6	13	7.2	5.6	5.9	3.6	2.5	5.1
7	3.3	4.1	6.9	3.9	4.6	43	6.8	6.5	5.2	3.6	2.4	5.1
8	3.4	4.9	4.7	3.7	4.6	44	6.6	6.5	4.7	3.4	2.5	4.9
9	3.3	4.4	4.1	3.6	4.4	43	6.2	5.4	4.5	3.4	2.4	4.6
10	3.3	3.9	3.9	3.6	11	19	6.0	27	4.6	3.4	2.4	4.4
11	3.7	3.8	3.8	5.8	5.6	15	5.8	19	5.4	3.9	2.4	4.1
12	3.4	3.6	3.8	14	7.4	17	5.6	8.4	4.4	10	2.4	4.1
13	3.4	3.8	4.3	9.3	5.8	13	21	6.7	4.1	4.1	2.4	3.9
14	3.4	3.6	4.1	7.7	5.2	14	15	7.6	4.6	3.1	2.4	3.9
15	3.5	4.9	4.8	6.8	5.0	16	13	7.7	5.3	3.1	2.4	3.6
16	3.3	4.3	3.9	10	4.8	13	13	13	4.6	3.1	2.4	3.6
17	3.1	8.6	5.5	13	4.6	11	9.5	6.8	4.3	3.1	2.4	3.6
18	3.1	4.9	4.2	31	4.6	11	8.7	5.6	4.1	2.9	2.6	3.9
19	3.1	4.3	3.9	20	4.5	11	8.0	5.3	4.0	2.6	2.6	6.5
20	3.2	4.3	3.7	14	9.2	10	7.4	5.8	3.9	2.6	2.6	11
21	3.1	4.9	3.6	10	6.9	10	6.7	6.3	4.5	2.6	2.6	13
22	3.1	4.2	5.7	8.7	5.3	10	6.5	5.3	4.3	2.4	2.6	6.1
23	3.1	4.1	28	7.7	5.2	22	6.2	10	4.0	2.9	22	21
24	5.4	4.6	8.0	7.1	6.6	18	5.8	6.7	3.6	2.9	28	10
25	3.8	5.5	8.4	6.6	7.6	12	5.4	5.7	3.3	2.6	32	9.8
26	3.5	4.1	19	6.2	7.2	11	7.8	10	3.1	2.6	17	7.0
27	3.3	3.8	7.7	6.0	6.4	11	5.3	8.1	3.1	2.6	19	6.1
28	15	3.8	6.1	5.6	17	10	5.3	6.3	3.0	2.4	8.2	6.1
29	5.7	3.7	5.5	5.5	---	9.1	5.6	5.3	3.0	2.4	26	6.1
30	4.4	3.6	5.1	5.4	---	8.7	5.4	5.3	2.9	2.4	21	5.8
31	15	---	4.8	5.9	---	10	---	29	---	2.4	9.1	---
TOTAL	134.1	132.8	186.1	248.0	174.8	532.8	241.6	283.9	153.6	104.7	236.5	211.9
MEAN	4.33	4.43	6.00	8.00	6.24	17.2	8.05	9.16	5.12	3.38	7.63	7.06
MAX	15	8.6	28	31	17	44	21	29	14	10	32	21
MIN	3.1	3.6	3.6	3.6	4.4	8.7	5.3	5.1	2.9	2.4	2.4	3.6
CFSM	.65	.66	.90	1.20	.93	2.57	1.20	1.37	.77	.51	1.14	1.06
IN.	.75	.74	1.03	1.38	.97	2.96	1.34	1.58	.85	.58	1.31	1.18
AC-FT	266	263	369	492	347	1060	479	563	305	208	469	420

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CAL YR 1976   TOTAL  3342.6   MEAN 9.13   MAX 58   MIN 2.9   CFSM 1.37   IN 18.59   AC-FT  6630
WTR YR 1977   TOTAL  2640.8   MEAN 7.24   MAX 44   MIN 2.4   CFSM 1.08   IN 14.68   AC-FT  5240
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12121510 EAST FORK ISSAQUAH CREEK AT MOUTH, AT ISSAQUAH, WA

LOCATION.--Lat 47°32'08", long 122°02'11", in NE¼SE¼ sec.28, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank between road and N.P. Railroad, 1.2 mi (1.9 km) downstream from former site "East Fork Issaquah Creek at Issaquah 12121500", in Issaquah and at mile 0.1 (0.2 km).

DRAINAGE AREA.--9.50 mi² (24.60 km²).

PERIOD OF RECORD.--March 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 76 ft (23.2 m) from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Mar. 23 to May 10, which are fair. Many minor diversions for irrigation and domestic use above station. At times dairy products plant discharges water just above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 540 ft³/s (15.3 m³/s) Dec. 3, 1975, gage height, 5.39 ft (1.643 m); minimum, 0.80 ft³/s (0.023 m³/s) July 27, 1975, gage height, 0.87 ft (0.265 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 80 ft³/s (2.27 m³/s) Dec. 26, gage height, 2.30 ft (0.701 m); minimum, 1.7 ft³/s (0.048 m³/s) Aug. 18, 19, gage height, 0.92 ft (0.280 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	15	8.9	17	13	29	24	10	34	6.3	3.5	6.2
2	10	13	8.1	16	12	31	21	12	28	6.9	3.2	6.6
3	12	8.1	7.7	16	11	50	20	13	26	7.4	2.8	7.2
4	10	7.3	7.3	13	11	38	18	15	29	8.7	3.2	11
5	9.9	6.9	7.3	12	11	30	18	14	26	7.9	3.2	7.8
6	9.5	6.1	6.9	12	10	28	17	13	20	7.3	2.9	6.3
7	9.3	6.1	22	11	10	31	16	12	17	6.8	3.3	5.9
8	8.8	6.1	17	10	9.8	51	19	11	16	6.1	2.9	6.3
9	8.3	6.1	12	9.6	9.5	54	18	11	15	5.8	3.2	5.3
10	8.4	5.7	11	9.6	13	44	16	13	14	5.7	2.5	4.8
11	8.3	5.3	11	11	11	37	15	15	13	6.7	2.5	4.4
12	7.8	5.7	9.4	23	13	44	14	13	12	6.7	2.5	4.4
13	7.7	5.3	11	21	12	38	16	12	12	6.2	2.8	4.1
14	7.8	5.7	9.4	19	11	34	15	12	11	5.8	2.8	3.9
15	7.8	7.3	9.8	19	11	33	15	11	11	5.3	2.8	3.7
16	6.6	7.7	8.9	26	10	30	23	12	11	4.9	2.2	3.6
17	6.5	15	12	33	10	28	20	12	11	5.3	2.2	3.7
18	6.6	10	13	46	9.8	25	18	11	9.9	5.3	2.2	3.7
19	6.5	10	11	43	9.6	25	16	10	9.9	5.1	2.5	6.2
20	6.2	8.5	10	35	9.9	24	15	9.8	9.8	5.3	2.5	7.2
21	6.3	8.1	9.8	28	11	25	14	9.8	9.2	4.5	2.8	12
22	6.4	7.7	11	23	11	26	14	9.4	8.8	4.5	2.5	7.7
23	6.4	6.9	50	20	9.9	32	14	12	8.4	4.7	8.1	12
24	8.1	11	39	18	9.6	30	12	15	8.2	4.7	14	12
25	10	39	36	16	13	31	12	13	7.7	4.4	13	13
26	11	27	58	15	12	29	16	16	7.5	4.5	23	11
27	9.0	18	53	14	12	33	13	16	7.7	4.0	8.6	9.0
28	10	13	39	13	27	30	12	24	7.5	3.6	7.1	8.8
29	12	12	30	12	---	27	11	21	7.1	3.5	7.1	12
30	10	10	24	12	---	24	11	18	6.5	3.8	12	9.6
31	12	---	20	13	---	23	---	31	---	3.4	8.0	---
TOTAL	265.5	313.6	583.5	586.0	323.1	1014	481	427.0	410.2	171.1	161.9	219.6
MEAN	8.56	10.5	18.8	18.9	11.5	32.7	16.0	13.8	13.7	5.52	5.22	7.31
MAX	12	39	58	46	27	54	24	31	34	8.7	23	13
MIN	6.2	5.3	6.9	9.6	9.5	23	11	9.4	6.5	3.4	2.2	3.6
CFSM	.90	1.11	1.98	1.98	1.21	3.44	1.68	1.45	1.44	.58	.55	.77
IN.	1.04	1.23	2.28	2.29	1.27	3.97	1.88	1.67	1.61	.67	.63	.86
AC-FT	527	622	1160	1160	641	2010	954	847	814	339	321	435

CAL YR 1976 TOTAL 7910.6 MEAN 21.6 MAX 149 MIN 4.5 CFSM 2.27 IN 31.01 AC-FT 15710
WTR YR 1977 TOTAL 4954.3 MEAN 13.6 MAX 58 MIN 2.2 CFSM 1.43 IN 19.40 AC-FT 9830

12121600 ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WA

LOCATION.--Lat 47°33'09", long 122°02'48", in SE¼NW¼ sec.21, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 30 ft (9 m) downstream from SE 56th Street bridge, 0.7 mi (1.1 km) downstream from North Fork, 1.2 mi (1.9 km) upstream from mouth, and 1.6 mi (2.6 km) northwest of Issaquah.

DRAINAGE AREA.--56.6 mi^2 (146.6 km^2) revised, includes 1.9 mi^2 (4.9 km^2) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--September 1963 to current year. Water quality records 1965-71, 1974, 1976, water temperatures September 1970 to September 1971.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Water-discharge records good. Many minor diversions for irrigation and domestic use above station.

AVERAGE DISCHARGE.--14 years, 142 ft^3/s (4.021 m^3/s) 34.07 in/yr (865 mm/yr), 102,900 acre-ft/yr (127 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,870 ft^3/s (81.3 m^3/s) Dec. 3, 1975, gage height, 11.46 ft (3.493 m); minimum, 15 ft^3/s (0.42 m^3/s) Aug. 18, 1977; minimum gage height, 2.34 ft (0.713 m) Sept. 21, 22, 29, 30, Oct. 12, 13, 16, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft^3/s (22.7 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 26	2000	*398	11.3	*4.93	1.503

Minimum discharge, 15 ft^3/s (0.42 m^3/s) Aug. 18, gage height, 2.85 ft (0.869 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	101	57	102	92	154	123	52	230	33	22	44
2	39	68	55	97	86	153	106	61	173	35	21	41
3	50	59	54	91	80	317	97	80	143	34	21	43
4	40	52	51	86	77	230	91	73	183	40	21	56
5	38	48	49	80	74	183	86	70	143	38	21	46
6	36	45	48	74	71	166	82	64	116	37	21	38
7	35	44	118	71	70	177	77	60	97	33	21	32
8	34	42	97	67	67	246	94	59	88	31	21	35
9	33	42	85	64	65	262	91	55	80	31	21	33
10	34	41	76	63	83	196	79	64	73	30	20	31
11	34	40	70	71	82	166	77	83	65	32	20	30
12	35	40	64	128	86	189	73	65	63	35	20	30
13	35	38	68	131	86	170	80	59	60	34	20	29
14	35	38	65	119	77	160	79	57	57	31	19	29
15	35	43	64	116	73	158	79	55	56	30	20	28
16	35	50	61	149	71	143	123	70	54	30	19	28
17	35	65	70	181	70	131	101	80	51	31	18	28
18	35	63	74	278	70	121	91	74	48	30	18	28
19	34	59	65	255	67	118	83	65	46	29	19	36
20	34	57	61	193	67	113	79	60	45	28	20	38
21	34	54	61	158	73	118	76	60	45	27	20	104
22	35	51	65	135	71	119	74	56	44	26	21	57
23	35	50	255	119	65	156	68	77	42	26	34	71
24	38	55	187	108	63	149	64	118	40	25	85	96
25	43	168	158	101	73	153	64	94	38	25	68	91
26	56	114	319	94	76	147	74	114	37	25	162	74
27	45	88	294	91	74	172	64	109	37	25	64	58
28	69	76	206	86	125	153	60	126	36	24	48	54
29	63	67	162	85	---	138	56	114	34	24	49	67
30	50	63	133	82	---	123	54	94	34	23	82	60
31	88	---	114	89	---	119	---	177	---	22	57	---
TOTAL	1276	1821	3306	3564	2134	5100	2445	2445	2258	924	1093	1435
MEAN	41.2	60.7	107	115	76.2	165	81.5	78.9	75.3	29.8	35.3	47.8
MAX	88	168	319	278	125	317	123	177	230	40	162	104
MIN	33	38	48	63	63	113	54	52	34	22	18	28
CFSM	.73	1.07	1.89	2.03	1.35	2.92	1.44	1.39	1.33	.53	.62	.85
IN.	.84	1.20	2.17	2.34	1.40	3.35	1.61	1.61	1.48	.61	.72	.94
AC-FT	2530	3610	6560	7070	4230	10120	4850	4850	4480	1830	2170	2850

CAL YR 1976 TOTAL 45055 MEAN 123 MAX 1070 MIN 32 CFSM 2.17 IN 29.61 AC-FT 89370
WTR YR 1977 TOTAL 27801 MEAN 76.2 MAX 319 MIN 18 CFSM 1.35 IN 18.27 AC-FT 55140

12121800 PINE LAKE NEAR ISSAQUAH, WA

LOCATION.--Lat 47°35'17", long 122°02'24", in NW¼NE¼ sec.9, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, in the county park on northeast shore 3.8 mi (6.1 km) north of Issaquah.

DRAINAGE AREA.--1.06 mi² (2.75 km²).

PERIOD OF RECORD.--May 1956 to March 1975 (fragmentary), April 1975 to September 1977 (discontinued).

GAGE.--Nonrecording gage. Altitude of gage is 390 ft (119 m), from topographic map. Prior to Sept. 11, 1966, at site on north shore 0.6 mi (1.0 km) across lake at same datum. Sept. 11, 1966 to Mar. 20, 1975 at site 0.2 mi (0.3 km) northeast at same datum.

REMARKS.--Records good. Some pumpage from lake for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.03 ft (1.533 m) Mar. 6, 1972; minimum observed, 1.14 ft (0.347 m) Oct. 7, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 4.00 ft (1.219 m) Mar. 13, 14; minimum observed, 2.38 ft (0.725 m) Aug. 21.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.62	2.56	2.50	2.70	2.98	3.20	3.62	3.50	3.56	3.20	2.78	2.68
2	2.62	2.54	2.50	2.68	2.98	3.26	3.60	3.48	3.56	3.20	2.78	2.66
3	2.62	2.52	2.48	2.68	2.98	3.26	3.60	3.48	3.58	3.18	2.76	2.66
4	2.60	2.50	2.48	2.68	2.98	3.36	3.60	3.48	3.58	3.18	2.74	2.68
5	2.60	2.50	2.48	2.68	2.98	3.40	3.60	3.50	3.48	3.18	2.72	2.68
6	2.60	2.50	2.48	2.68	2.98	3.46	3.58	3.50	3.48	3.18	2.70	2.66
7	2.58	2.50	2.49	2.68	2.98	3.60	3.58	3.50	3.56	3.16	2.68	2.66
8	2.58	2.50	2.50	2.68	2.98	3.72	3.58	3.50	3.54	3.14	2.68	2.64
9	2.56	2.50	2.50	2.68	2.98	3.90	3.58	3.48	3.56	3.16	2.64	2.62
10	2.54	2.50	2.50	2.68	3.00	3.90	3.56	3.48	3.52	3.14	2.60	2.60
11	2.54	2.50	2.48	2.72	3.02	3.94	3.56	3.48	3.50	3.14	2.58	2.60
12	2.52	2.50	2.48	2.76	3.06	3.98	3.56	3.48	3.48	3.12	2.58	2.60
13	2.52	2.48	2.48	2.76	3.08	4.00	3.56	3.48	3.48	3.12	2.50	2.60
14	2.50	2.48	2.48	2.76	3.08	4.00	3.58	3.46	3.46	3.10	2.50	2.58
15	2.50	2.48	2.48	2.76	3.07	3.96	3.58	3.46	3.46	3.10	2.50	2.58
16	2.50	2.48	2.48	2.78	3.08	3.90	3.60	3.46	3.44	3.10	2.48	2.54
17	2.48	2.50	2.49	2.76	3.08	3.90	3.60	3.42	3.42	3.06	2.46	2.52
18	2.48	2.50	2.49	2.90	3.08	3.88	3.58	3.42	3.40	3.07	2.44	2.52
19	2.46	2.50	2.49	2.92	3.08	3.86	3.58	3.40	3.40	3.00	2.42	2.52
20	2.44	2.50	2.49	2.94	3.10	3.84	3.58	3.40	3.30	3.00	2.40	2.50
21	2.42	2.50	2.49	2.96	3.10	3.78	3.56	3.40	3.38	2.98	2.38	2.52
22	2.42	2.50	2.50	2.96	3.10	3.74	3.56	3.42	3.36	2.98	2.44	2.54
23	2.40	2.50	2.52	2.96	3.10	3.72	3.56	3.42	3.36	2.98	2.50	2.58
24	2.42	2.50	2.58	2.96	3.10	3.70	3.56	3.46	3.32	2.98	2.50	2.58
25	2.42	2.50	2.58	2.98	3.10	3.70	3.58	3.48	3.30	2.94	2.58	2.54
26	2.42	2.50	2.56	2.98	3.10	3.70	3.54	3.48	3.30	2.90	2.68	2.52
27	2.44	2.50	2.56	2.98	3.16	3.70	3.50	3.48	3.26	2.86	2.68	2.58
28	2.48	2.50	2.64	2.96	3.16	3.70	3.50	3.48	3.26	2.84	2.68	2.60
29	2.50	2.50	2.69	2.96	---	3.68	3.50	3.46	3.24	2.84	2.68	2.60
30	2.50	2.50	2.70	2.96	---	3.66	3.50	3.46	3.24	2.82	2.68	2.60
31	2.54	---	2.70	2.98	---	3.64	---	3.52	---	2.80	2.68	---
MEAN	2.51	2.50	2.52	2.82	3.05	3.71	3.57	3.47	3.43	3.05	2.59	2.59
MAX	2.62	2.56	2.70	2.98	3.16	4.00	3.62	3.52	3.58	3.20	2.78	2.68
MIN	2.40	2.48	2.48	2.68	2.98	3.20	3.50	3.40	3.24	2.80	2.38	2.50

CAL YR 1976 MEAN 3.25 MAX 4.31 MIN 2.40
WTR YR 1977 MEAN 2.98 MAX 4.00 MIN 2.38

12122000 SAMMAMISH LAKE NEAR REDMOND, WA

LOCATION.--Lat 47°34'47", long 122°06'38", in NE¼SW¼ sec.12, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on west shore 5.6 mi (9.0 km) uplake from outlet and 6.5 mi (10.5 km) south of Redmond.

DRAINAGE AREA.--99.6 mi² (258.0 km²), revised, includes 1.9 mi² (4.9 km²) Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1939 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 24.04 ft (7.327 m) above mean sea level. Prior to June 22, 1942, nonrecording gage 4.6 mi (7.4 km) downlake at datum 1.00 ft (0.305 m) higher. June 22, 1942, to Aug. 22, 1951, nonrecording gage 4.5 mi (7.2 km) downlake at datum 1.00 ft (0.305 m) higher and Aug. 23, 1951, to Apr. 29, 1965, at present datum.

REMARKS.--Records good. Minor regulation on tributaries. Many small diversions from tributaries for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.40 ft (2.865 m) Feb. 12, 1951 (present datum); minimum observed, 1.09 ft (0.332 m) Aug. 25-27, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 10.83 ft (3.301 m), present datum, was observed on Dec. 22, 1933, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 2.83 ft (0.862 m) Mar. 9; minimum, 1.47 ft (0.448 m) Aug. 21, 22, 23.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.89	1.98	2.04	2.48	2.27	2.21	2.45	---	2.34	1.83	1.64	1.92
2	1.88	1.99	2.03	2.45	2.25	2.26	2.43	---	2.36	1.83	1.64	1.91
3	1.89	1.99	2.02	2.42	2.23	2.40	2.41	---	2.37	1.82	1.64	1.92
4	1.89	1.99	2.01	2.39	2.21	2.47	2.38	---	2.42	1.87	1.63	1.94
5	1.88	1.98	2.00	2.36	2.19	2.49	2.36	---	2.43	1.86	1.63	1.94
6	1.87	1.98	1.99	2.32	2.17	2.49	2.34	---	2.42	1.86	1.63	1.93
7	1.86	1.97	2.02	2.29	2.16	2.56	---	---	2.40	1.86	1.62	1.92
8	1.86	1.96	2.05	2.25	2.13	2.61	---	---	2.37	1.84	1.61	1.92
9	1.85	1.96	2.05	2.22	2.11	2.77	---	---	2.33	1.83	1.60	1.90
10	1.85	1.95	2.05	2.19	2.14	2.80	---	2.11	2.29	1.82	1.59	1.89
11	1.85	1.95	2.05	2.18	2.15	2.78	---	2.12	2.25	1.82	1.59	1.87
12	1.84	1.93	2.04	2.22	2.15	2.78	---	2.11	2.22	1.83	1.58	1.86
13	1.84	1.92	2.05	2.25	2.15	2.76	---	2.09	2.19	1.84	1.57	1.85
14	1.83	1.92	2.05	2.27	2.14	2.73	---	2.07	2.16	1.84	1.56	1.84
15	1.82	1.92	2.06	2.28	2.13	2.73	---	2.06	2.13	1.83	1.55	1.82
16	1.82	1.93	2.05	2.31	2.12	2.71	---	2.06	2.11	1.81	1.55	1.81
17	1.81	1.95	2.05	2.36	2.11	2.68	---	2.07	2.09	1.80	1.54	1.80
18	1.80	1.97	2.06	2.46	2.10	2.64	---	2.07	2.06	1.79	1.52	1.80
19	1.79	1.97	2.06	2.54	2.09	2.61	---	2.07	2.03	1.77	1.51	1.81
20	1.78	1.97	2.05	2.56	2.08	2.58	---	2.06	2.01	1.76	1.50	1.83
21	1.77	1.98	2.05	2.56	2.08	2.56	---	2.04	1.99	1.74	1.48	1.88
22	1.77	1.97	2.05	2.55	2.07	2.53	---	2.04	1.97	1.73	1.48	1.89
23	1.76	1.97	2.16	2.52	2.07	2.55	---	2.06	1.96	1.72	1.51	1.92
24	1.77	1.97	2.26	2.49	2.06	2.56	---	2.10	1.93	1.70	1.64	1.95
25	1.78	2.01	2.30	2.46	2.06	2.55	---	2.11	1.92	1.70	1.74	1.99
26	1.79	2.05	2.39	2.43	2.07	2.53	---	2.13	1.90	1.69	1.86	2.00
27	1.80	2.06	2.49	2.39	2.09	2.53	---	2.16	1.88	1.68	1.89	2.00
28	1.86	2.05	2.53	2.36	2.12	2.52	---	2.17	1.87	1.67	1.89	2.01
29	1.89	2.05	2.53	2.33	---	2.51	---	2.18	1.85	1.66	1.88	2.02
30	1.89	2.04	2.53	2.30	---	2.49	---	2.18	1.84	1.65	1.92	2.03
31	1.93	---	2.50	2.28	---	2.47	---	2.25	---	1.65	1.92	---
MEAN	1.84	1.98	2.15	2.37	2.13	2.57	---	---	2.16	1.78	1.64	1.91
MAX	1.93	2.06	2.53	2.56	2.27	2.80	---	---	2.43	1.87	1.92	2.03
MIN	1.76	1.92	1.99	2.18	2.06	2.21	---	---	1.84	1.65	1.48	1.80

CAL YR 1976 MEAN 2.30 MAX 3.95 MIN 1.76

12122010 SAMMAMISH RIVER ABOVE BEAR CREEK NEAR REDMOND, WA

LOCATION.--Lat 47°39'28", long 122°06'53", in NE¼NW¼ sec.13, T.25 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 2,500 ft (760 m) upstream from bridge leading to county park, 3,000 ft (910 m) downstream from outlet of Sammamish Lake, 1.5 mi (2.4 km) south of Redmond and at mile 14.6 (23.5 km).

DRAINAGE AREA.--102 mi² (264 km²) revised, includes 1.9 mi² (4.9 km²) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 23.11 ft (7.044 m) above mean sea level based on King County datum.

REMARKS.--Records good. Natural regulation from Sammamish Lake and some minor regulation on upstream tributaries. Many small diversions for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,280 ft³/s (36.2 m³/s) Dec. 5, 1975, gage height, 5.79 ft (1.765 m); minimum discharge, 15 ft³/s (0.42 m³/s) Aug. 21, 1977, gage height, 2.37 ft (0.722 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 371 ft³/s (10.5 m³/s) Mar. 9, gage height, 3.86 ft (1.177 m); minimum discharge, 15 ft³/s (0.42 m³/s) Aug. 21, gage height, 2.37 ft (0.722 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	96	102	207	172	159	213	116	183	69	40	76
2	67	94	102	202	168	171	204	118	185	71	40	73
3	65	94	100	196	164	205	198	130	185	71	40	76
4	66	94	98	187	159	223	192	132	207	78	40	78
5	66	94	98	179	153	220	187	125	207	78	38	76
6	62	92	96	173	149	233	177	122	206	76	38	73
7	62	92	105	166	143	244	172	122	197	76	37	71
8	62	90	111	160	138	273	175	122	188	73	36	69
9	58	90	109	152	135	318	172	116	177	73	34	67
10	60	90	111	147	148	315	165	120	171	69	33	62
11	58	88	107	145	147	309	157	125	166	69	31	60
12	58	88	107	153	147	309	150	120	156	73	31	60
13	57	84	109	161	145	306	157	118	148	73	31	58
14	55	84	109	165	143	300	162	116	142	71	30	57
15	55	84	109	168	138	294	162	109	135	69	28	56
16	54	88	109	175	138	291	165	109	127	67	26	52
17	50	88	111	186	136	282	165	109	122	66	26	49
18	49	90	113	212	130	267	160	109	118	62	24	49
19	49	90	111	232	128	261	157	107	113	58	22	52
20	49	90	111	241	129	252	147	107	109	57	20	54
21	47	92	109	244	133	249	145	105	105	55	19	60
22	46	92	109	240	132	234	147	100	98	52	18	62
23	46	90	135	234	124	246	142	105	96	49	22	67
24	49	92	155	225	122	249	137	116	92	49	40	73
25	54	90	163	217	122	246	137	118	86	49	52	76
26	54	105	187	209	124	243	137	125	84	47	71	78
27	55	107	209	200	122	234	130	132	80	47	76	78
28	64	107	217	192	136	231	130	135	76	47	76	80
29	73	105	221	184	---	220	122	135	73	44	71	82
30	73	105	217	177	---	222	118	135	71	41	76	82
31	84	---	213	174	---	216	---	152	---	40	76	---
TOTAL	1807	2785	4063	5901	3925	7838	4782	3710	4101	1915	1242	2000
MEAN	58.3	92.8	131	190	140	253	159	120	137	61.8	40.1	66.7
MAX	84	107	221	244	172	318	213	152	207	78	76	82
MIN	46	84	96	145	122	159	118	100	71	40	18	49
CFSM	.57	.91	1.28	1.86	1.37	2.48	1.56	1.18	1.34	.61	.39	.65
IN.	.66	1.02	1.48	2.15	1.43	2.86	1.74	1.35	1.50	.70	.45	.73
AC-FT	3580	5520	8060	11700	7790	15550	9490	7360	8130	3800	2460	3970

CAL YR 1976 TOTAL 68937 MEAN 188 MAX 737 MIN 45 CFSM 1.84 IN 25.14 AC-FT 136700
WTR YR 1977 TOTAL 44069 MEAN 121 MAX 318 MIN 18 CFSM 1.19 IN 16.07 AC-FT 87410

12125200 SAMMAMISH RIVER NEAR WOODINVILLE, WA

LOCATION.--Lat 47°42'15", long 122°08'29", in SW¼SW¼ sec.26, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 3.9 mi (6.3 km) upstream from Bear Creek, 3.6 mi (5.8 km) southeast of Woodinville, and at mile 10.8 (17.4 km).

DRAINAGE AREA.--159 mi² (412 km²) revised, includes 1.9 mi² (4.9 km²) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1965 to current year, water temperatures August 1965 to February 1967.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (Corps of Engineers bench mark). Prior to July 7, 1970, auxiliary water-stage recorder 2 mi (3.2 km) downstream from base gage at same datum.

REMARKS.--Records good. Natural regulation from Sammamish Lake and some minor regulation. Many small diversions for irrigation and domestic use.

AVERAGE DISCHARGE.--12 years, 334 ft³/s (9.459 m³/s), 28.89 in/yr (734 mm/yr), 242,000 acre-ft/yr (298 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s (67.7 m³/s) Mar. 6, 1972, elevation, 25.83 ft (7.873 m); minimum daily, 25 ft³/s (0.71 m³/s) Aug. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 700 ft³/s (19.8 m³/s) Mar. 9, elevation, 19.09 ft (5.819 m); minimum daily, 25 ft³/s (0.71 m³/s) Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	164	137	272	249	312	289	157	396	111	28	163
2	111	150	134	268	242	325	274	161	352	108	25	136
3	114	143	130	260	227	475	260	196	336	113	30	163
4	110	139	128	251	217	423	248	193	362	122	29	160
5	103	133	126	241	209	383	239	190	370	126	35	156
6	96	136	127	230	202	368	226	182	350	122	30	130
7	89	133	167	220	195	421	217	171	334	119	35	130
8	87	128	168	210	185	490	211	173	327	122	47	127
9	85	128	156	200	185	658	206	174	308	108	49	119
10	87	122	146	193	214	561	197	181	289	99	28	113
11	88	111	142	193	217	501	193	244	276	95	41	108
12	86	105	139	251	210	509	188	212	264	107	34	105
13	85	108	143	268	206	472	240	194	248	105	34	95
14	80	105	144	268	197	434	301	185	239	97	41	93
15	77	117	145	269	193	434	253	177	231	106	41	88
16	76	117	145	296	188	429	256	182	221	100	52	84
17	76	134	149	332	186	398	245	185	217	97	50	80
18	66	143	158	400	182	374	231	182	209	93	44	79
19	63	134	150	401	178	367	217	181	202	88	36	87
20	62	130	148	375	174	350	206	177	193	84	49	93
21	61	132	145	357	189	335	200	174	185	84	51	160
22	61	136	143	340	189	323	199	170	178	80	47	130
23	60	130	245	327	182	344	190	184	170	75	58	154
24	66	130	280	311	181	354	184	224	163	66	122	185
25	74	150	253	295	188	338	181	209	154	57	182	170
26	71	154	324	282	192	325	188	224	147	59	182	161
27	77	154	324	269	185	325	178	236	143	53	160	146
28	186	146	311	260	235	322	171	239	130	51	145	143
29	123	138	303	258	---	315	170	237	136	44	167	153
30	126	136	295	251	---	299	164	229	129	49	237	150
31	156	---	284	245	---	291	---	310	---	44	171	---
TOTAL	2722	3986	5769	8593	5597	12255	6522	6133	7281	2784	2269	3852
MEAN	87.8	133	186	277	200	395	217	198	243	89.8	73.0	128
MAX	156	164	324	401	249	658	301	310	396	126	237	185
MIN	60	105	126	193	174	291	164	157	129	44	25	79
CFSM	.55	.84	1.17	1.74	1.26	2.48	1.37	1.25	1.53	.57	.46	.81
IN.	.64	.93	1.35	2.01	1.31	2.87	1.53	1.43	1.70	.65	.54	.90
AC-FT	5400	7910	11440	17040	11100	24310	12940	12160	14440	5520	4540	7640

CAL YR 1976 TOTAL 99693 MEAN 272 MAX 1290 MIN 60 CFSM 1.71 IN 23.32 AC-FT 197700
WTR YR 1977 TOTAL 67783 MEAN 186 MAX 658 MIN 25 CFSM 1.17 IN 15.86 AC-FT 134420

12127100 SWAMP CREEK AT KENMORE, WA

LOCATION.--Lat 47°45'22", long 122°13'37", in NE¼ sec.12, T.26 N., R.4 E., King County, Hydrologic Unit 17110012, on right bank on upstream side of Bothell Way bridge (State Highway 522) at Kenmore and at mile 0.5 (0.8 km).

DRAINAGE AREA.--23.1 mi² (59.8 km²).

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 14.46 ft (4.407 m) above mean sea level (Washington State Highway Department). Apr. 27, 1967 to Sept. 7, 1967, nonrecording gage at same site and datum.

REMARKS.--Records good except for period of no gage-height record, Dec. 18 to Feb. 10, which are fair. Some minor diversions for domestic use upstream from station. No regulation.

AVERAGE DISCHARGE.--12 years (water years 1964-72, 1975-77), 34.1 ft³/s (0.966 m³/s), 20.05 in/yr (509 mm/yr), 24,710 acre-ft/yr (30.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 487 ft³/s (13.8 m³/s) Mar. 3, 1972, gage height, 6.03 ft (1.838 m); minimum, 2.3 ft³/s (0.065 m³/s) Aug. 12, 1977; minimum gage height, 1.71 ft (0.521 m) July 31, Aug. 1, 2, 1965, Aug. 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0345	*239	6.77	*4.17	1.271

Minimum discharge, 2.3 ft³/s (0.065 m³/s) Aug. 12, gage height, 1.71 ft (0.521 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	23	8.9	13	17	62	32	12	86	5.6	3.9	9.3
2	7.7	13	8.9	13	16	58	26	14	44	6.1	3.8	10
3	8.1	11	8.9	12	15	117	23	63	33	6.4	4.0	12
4	7.8	9.7	8.9	11	15	63	21	54	45	11	4.1	21
5	7.7	9.1	8.9	10	15	44	20	48	31	10	4.1	16
6	7.6	9.1	9.4	10	14	61	19	20	23	7.6	4.0	9.7
7	6.7	8.6	10	9.6	14	116	18	22	18	6.7	4.2	8.4
8	6.1	8.9	14	9.3	14	142	17	20	16	6.2	3.8	7.7
9	5.9	10	12	9.0	14	196	16	17	14	6.1	4.1	7.2
10	6.7	9.1	11	9.2	33	103	15	20	13	6.0	3.5	6.9
11	6.9	8.6	10	15	20	71	15	65	12	5.9	3.5	6.5
12	6.5	8.4	9.8	34	18	65	14	39	11	10	3.0	6.5
13	6.1	8.5	9.7	26	18	48	44	28	9.6	6.0	2.8	6.1
14	6.1	8.3	9.5	17	16	55	41	23	9.6	6.0	2.8	6.1
15	6.1	9.7	11	16	15	45	28	19	9.7	6.1	2.9	6.1
16	6.1	11	10	23	14	52	30	40	9.1	6.1	3.0	5.9
17	6.1	20	14	35	13	41	30	33	8.6	7.0	3.0	5.9
18	6.1	18	14	86	13	36	23	25	7.7	6.5	2.9	5.9
19	5.9	13	11	72	13	35	20	21	7.7	6.1	3.3	9.7
20	5.9	11	9.5	40	17	32	19	18	7.6	6.3	4.0	23
21	5.9	12	9.0	34	24	29	17	16	7.7	5.8	4.0	48
22	6.1	11	15	28	19	26	17	14	7.6	4.8	4.2	16
23	6.7	10	68	26	16	30	16	26	6.9	4.9	22	50
24	9.7	11	26	22	16	34	15	20	6.1	4.4	48	93
25	12	14	23	20	21	27	14	26	5.9	4.3	41	31
26	9.6	12	65	19	21	26	21	67	5.9	5.5	35	22
27	8.1	10	35	18	18	33	15	28	5.8	11	18	18
28	20	9.5	24	17	48	35	14	24	5.9	4.2	12	16
29	17	9.2	18	16	---	32	12	21	5.9	5.1	19	16
30	12	9.0	15	15	---	28	12	18	5.8	5.1	29	16
31	31	---	14	16	---	27	---	70	---	4.2	13	---
TOTAL	271.8	335.7	509.4	703.1	507	1767	624	931	470.1	190.4	315.9	511.0
MEAN	8.77	11.2	16.4	22.7	18.1	57.0	20.8	30.0	15.7	6.14	10.2	17.0
MAX	31	23	68	86	48	196	44	70	86	11	48	93
MIN	5.9	8.3	8.9	9.0	13	26	12	12	5.8	4.2	2.8	5.9
CFSM	.38	.48	.71	.98	.78	2.47	.90	1.30	.68	.27	.44	.74
IN.	.44	.54	.82	1.13	.82	2.85	1.00	1.50	.76	.31	.51	.82
AC-FT	539	666	1010	1390	1010	3500	1240	1850	932	378	627	1010

CAL YR 1976 TOTAL 9243.4 MEAN 25.3 MAX 158 MIN 4.6 CFSM 1.10 IN 14.89 AC-FT 18330
WTR YR 1977 TOTAL 7154.3 MEAN 19.6 MAX 196 MIN 2.8 CFSM .85 IN 11.52 AC-FT 14190

LAKE WASHINGTON BASIN

12127400 LAKE BALLINGER NEAR EDMONDS, WA

LOCATION.--Lat 47°46'43", long 122°19'38", in NE¼SW¼ sec.32, T.27 N., R.4 E., Snohomish County, Hydrologic Unit 17110012, at south end of lake, 0.2 mi (0.3 km) southwest of lake outlet, and 3 mi (4.8 km) southeast of Edmonds.

DRAINAGE AREA.--5.09 mi² (13.18 km²).

PERIOD OF RECORD.--January 1961 to June 1961 (fragmentary), July 1963 to December 1963, January to June 1966 (fragmentary), July 1966 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 275.65 ft (84.018 m) above mean sea level (levels by Washington State Department of Conservation from King County Aerial Survey bench mark). Prior to June 28, 1966, nonrecording gage at same site and datum. June 28 to Sept. 30, 1966, nonrecording gage at site about 700 ft (213 m) north of lake outlet at same datum.

REMARKS.--Records good. Outflow from lake controlled by flashboards in weir at outlet. No known diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 4.05 ft (1.234 m), from range in stage, about Mar. 6, 1972; minimum observed 1.00 ft (0.305 m) Jan. 24, 27, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 2.99 ft (0.911 m) Mar. 9; minimum, 1.44 ft (0.439 m) part or all of each day Oct. 19-23.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1.62	1.56	1.71	1.59	---	1.66	---	2.16	1.88	2.27	2.49
2	---	1.65	1.56	1.6[illegible]	1.59	---	1.62	---	2.04	1.89	2.27	2.47
3	---	1.70	1.56	1.66	1.56	2.40	1.60	---	1.96	1.90	2.27	2.48
4	---	1.73	1.56	1.63	1.57	2.33	1.59	---	1.95	2.01	2.27	2.56
5	---	1.69	1.55	1.61	1.56	2.16	1.58	---	1.86	2.08	2.27	2.51
6	---	1.65	1.56	1.59	1.55	2.06	1.57	---	1.81	2.09	2.26	2.45
7	1.50	1.62	1.59	1.57	1.5[illegible]	2.37	1.57	---	1.76	2.09	2.26	2.30
8	1.49	1.61	1.64	1.55	1.63	2.60	1.57	---	1.75	2.09	2.26	2.18
9	1.49	1.61	1.62	1.54	1.53	2.96	1.56	---	1.74	2.09	2.25	2.02
10	1.49	1.62	1.61	1.53	1.50	2.78	1.56	1.60	1.74	2.10	2.25	1.90
11	1.49	1.58	1.60	1.56	1.59	2.43	1.56	1.88	1.74	2.12	2.24	1.81
12	1.49	1.57	1.58	---	1.59	2.29	1.55	1.86	1.73	2.19	2.24	1.73
13	1.48	1.56	1.57	---	1.59	2.14	1.65	1.77	1.73	2.21	2.24	1.68
14	1.48	1.55	1.56	---	1.59	---	1.62	1.71	1.75	2.23	2.24	1.63
15	1.47	1.55	1.57	1.61	1.59	2.10	1.61	1.65	1.76	2.24	2.24	1.59
16	1.46	1.57	1.57	1.60	1.59	2.07	1.70	1.74	1.77	2.25	2.24	1.56
17	1.46	1.65	1.61	---	1.57	1.90	1.70	1.76	1.79	2.28	2.24	1.54
18	1.45	1.69	1.66	---	1.57	1.98	1.75	1.71	1.80	2.29	2.23	1.53
19	1.44	1.69	1.63	---	1.56	1.85	1.70	1.67	1.81	2.29	2.23	1.57
20	1.44	1.60	1.61	---	1.56	1.80	1.67	1.63	1.82	2.28	2.23	1.67
21	1.44	1.65	1.60	---	1.59	1.76	1.65	1.59	1.83	2.28	2.24	1.82
22	1.44	1.64	1.60	1.61	1.64	1.72	1.64	1.57	1.83	2.28	2.24	1.87
23	1.45	1.62	---	1.75	1.63	1.73	1.63	1.65	1.84	2.28	2.46	2.03
24	1.49	1.61	---	1.71	1.61	1.77	1.62	1.63	1.85	2.28	2.65	2.44
25	1.57	1.64	---	1.67	1.65	1.75	1.60	1.60	1.85	2.28	2.80	2.30
26	1.56	1.62	2.06	1.66	1.67	1.71	1.67	1.90	1.85	2.28	2.84	2.15
27	1.55	1.61	2.02	1.62	1.66	1.71	1.66	1.84	1.85	2.28	2.67	2.02
28	1.66	1.61	1.93	1.68	---	1.70	1.64	1.79	1.86	2.28	2.55	1.97
29	1.73	1.58	1.86	1.59	---	1.67	---	1.74	1.86	2.28	2.61	1.94
30	1.70	1.57	1.81	1.57	---	1.65	---	1.69	1.87	2.28	2.49	1.86
31	1.66	---	1.75	1.58	---	1.63	---	1.61	---	2.28	2.57	---
MEAN	---	1.66	---	---	---	---	---	---	1.83	2.18	2.37	2.01
MAX	---	1.73	---	---	---	---	---	---	2.16	2.29	2.84	2.56
MIN	---	1.55	---	---	---	---	---	---	1.73	1.88	2.23	1.53

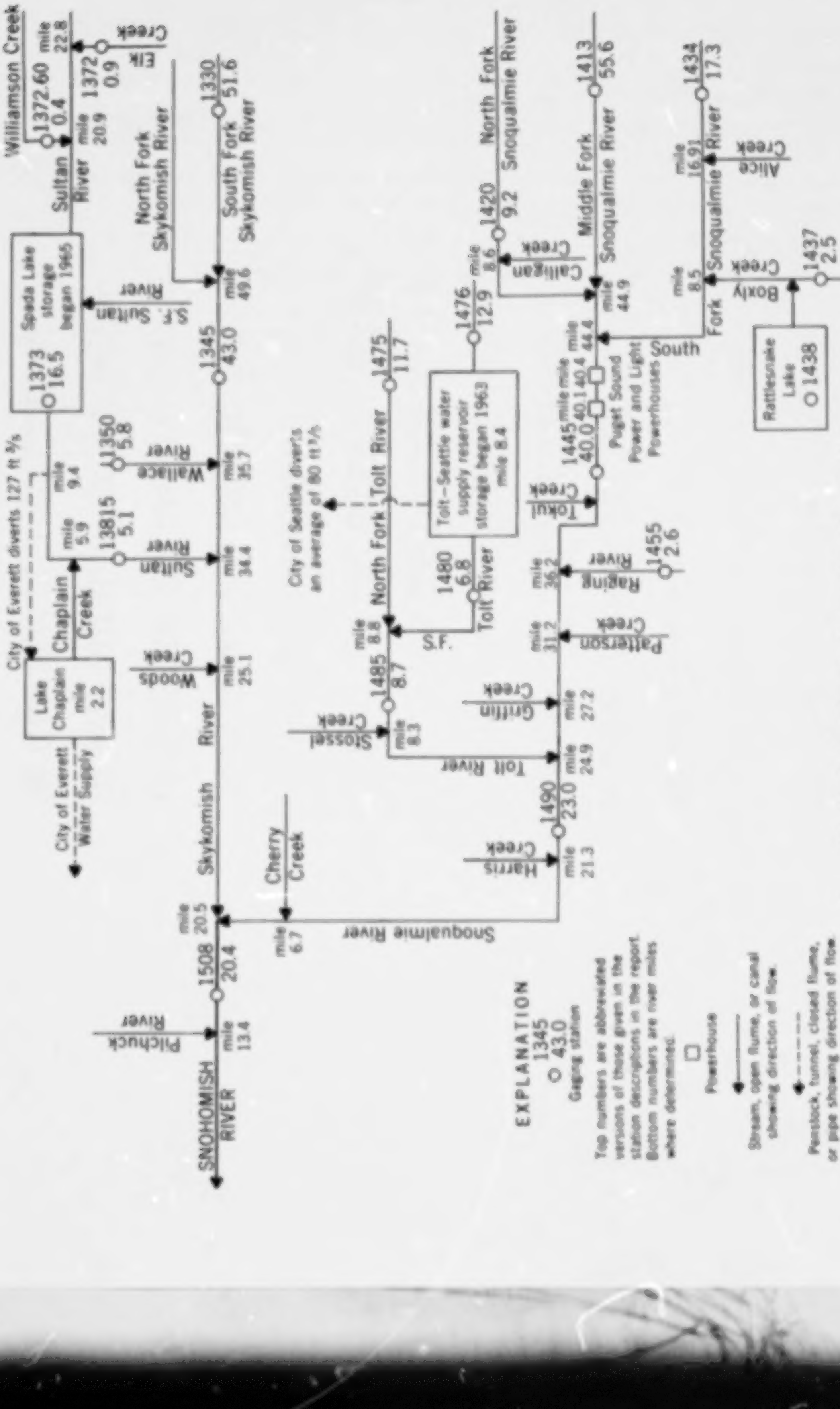
SNOHOMISH RIVER
mile 13.4
Pilchuck River
1508
20.4
mile 20.5
Skykomish River
Cherry Creek
mile 6.7
Snoqualmie River
City of Everett Water Supply
Lake Chaplain mile 2.2
City of Everett diverts 127 ft³/s
Chaplain Creek
mile 5.9
13815
5.1
mile 9.4
1373
16.5
Spada Lake storage began 1965
S.F. Sultan River
Sultan River
mile 20.9
1372.60
0.4
Williamson Creek
1372
0.9
Elk Creek
mile 22.8
Woods Creek
mile 25.1
Sultan River
mile 34.4
Wallace River
mile 35.7
11350
5.8
1345
43.0
North Fork Skykomish River
mile 49.6
South Fork Skykomish River
1330
51.6
Harris Creek
mile 21.3
1490
23.0
mile 24.9
Tolt River
Stossel Creek
mile 8.3
1485
8.7
mile 8.8
S.F.
Tolt River
1480
6.8
North Fork Tolt River
1475
11.7
City of Seattle diverts an average of 80 ft³/s
Tolt–Seattle water supply reservoir storage began 1963 mile 8.4
Griffin Creek
mile 27.2
Patterson Creek
mile 31.2
Raging River
mile 36.2
1455
2.6
Tokul Creek
1445
40.0
mile 40.1
mile 40.4
mile 44.4
Puget Sound Power and Light Powerhouses
1476
12.9
Calligan Creek
mile 8.6
1420
9.2
North Fork Snoqualmie River
mile 44.9
Middle Fork Snoqualmie River
1413
55.6
South Fork Snoqualmie River
mile 8.5
Boxley Creek
1437
2.5
Rattlesnake Lake
1438
Alice Creek
mile 16.91
1434
17.3
EXPLANATION
1345
43.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 15. Gaging stations in Snohomish River basin.

12132500 SOUTH FORK SKYKOMISH RIVER NEAR MILLER RIVER, WA

LOCATION.--Lat 47°43'48", long 121°24'27", in SW¼NW¼ sec.21, T.26 N., R.11 E., King County, Hydrologic Unit 17110009, at road bridge 0.9 mi (1.4 km) northwest of Miller River and 0.8 mi (1.3 km) east of Grotto.

DRAINAGE AREA.--313 mi² (811 km²).

PERIOD OF RECORD.--October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
11...	1235	530	36	7.5	11.7	8	2	11.0	.02	.03	.00	.00
25...	1315	730	43	7.4	7.5	17	1	11.6	.02	.02	.01	.00
NOV												
08...	1340	550	30	7.1	6.4	13	1	11.0	.06	.02	.00	.00
16...	1240	2600	32	7.3	8.1	33	9	11.6	.17	.06	.01	.00
DEC												
05...	1315	665	41	7.3	4.3	8	1	13.2	.13	.04	.00	.00
20...	1250	1170	40	7.1	3.7	13	3	13.4	.17	.02	.01	.00
JAN												
11...	1400	710	50	7.2	2.3	4	3	12.9	.15	.05	.00	.00
24...	1330	1350	40	6.9	3.7	13	2	13.4	.14	.04	.01	.00
FEB												
01...	1335	810	50	7.5	4.5	8	1	12.4	.11	.02	.01	.00
21...	1215	1320	36	7.1	4.9	25	2	12.1	.17	.02	.01	.00
MAR												
14...	1300	1020	48	7.1	4.1	4	3	13.0	.17	.06	.00	.00
29...	1400	1240	40	7.4	6.4	13	3	12.6	.16	.01	.00	.00
APR												
11...	1240	1750	37	7.3	7.4	13	3	12.4	.10	.02	.00	.00
25...	1350	5400	25	6.8	6.9	21	8	12.0	1.3	.04	.03	.00
MAY												
09...	1420	1660	33	7.3	9.2	13	2	11.5	.07	.01	.00	.00
23...	1255	2200	29	7.0	7.1	13	4	12.0	.17	.08	.01	.00
JUN												
13...	1340	2100	25	7.2	12.3	17	1	10.7	.03	.03	.01	.00
27...	1310	1150	41	7.6	13.9	25	2	10.5	.05	.03	.01	.01
JUL												
05...	1330	890	33	7.0	12.0	8	1	10.9	.04	.03	.00	.00
19...	1410	690	33	7.3	14.3	4	2	10.2	.04	.03	.00	.00
AUG												
01...	1225	460	37	7.1	17.0	13	4	10.4	.05	.05	.00	.00
15...	1240	420	39	7.2	16.5	8	1	9.9	.05	.02	.00	.00
SEP												
05...	1245	960	35	7.5	13.2	21	2	11.7	.08	.00	.00	.00
19...	1340	515	41	7.1	10.9	8	1	10.9	.06	.01	.00	.00

12133000 SOUTH FORK SKYKOMISH RIVER NEAR INDEX, WA

LOCATION.--Lat 47°48'20", long 121°32'44", in NE¼ sec.29, T.27 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on right bank 600 ft (183 m) upstream from Sunset Falls, 1.1 mi (1.8 km) southeast of Index, 2.0 mi (3.2 km) upstream from confluence with North Fork, and at mile 51.6 (83.0 km).

DRAINAGE AREA.--355 mi² (919 km²).

PERIOD OF RECORD.--October 1902 to September 1905, April 1911 to current year.

REVISED RECORDS.--WSP 512: 1903-5, 1911-14. WSP 572: Drainage area. WSP 792: 1934. WSP 1286: 1903-5(M), 1912(M), 1914-29(M), 1931-34(M).

GAGE.--Water-stage recorder. Datum of gage is 574.80 ft (175.199 m) above mean sea level. See WSP 1932 for history of changes prior to Mar. 15, 1934.

REMARKS.--Records excellent. Small diversions for domestic use. No regulation.

AVERAGE DISCHARGE.--69 years, 2,445 ft³/s (69.24 m³/s) 93.53 in/yr (2,376 mm/yr) 1,771,000 acre-ft/yr (2,180 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,000 ft³/s (1,560 m³/s) Dec. 12, 1921, gage height, 22.8 ft (6.95 m), from high-water marks, site then in use, from rating curve extended above 22,500 ft³/s (637 m³/s) on basis of slope-area measurement at gage height 22.12 ft (6.742 m); minimum, 165 ft³/s (4.67 m³/s) Nov. 29, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 5 ft (1.5 m) higher than that of Dec. 12, 1921, discharge, about, 70,000 ft³/s (1,980 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1400	*19,400	549	*14.65	4.465

Minimum discharge, 391 ft³/s (11.1 m³/s) Oct. 24, gage height, 1.20 ft (0.366 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	588	3250	1070	1670	972	1750	1330	3930	3260	1070	548	1120
2	588	1740	905	1470	920	1550	1280	4460	2820	1140	537	914
3	707	1270	925	1320	860	1440	1210	4580	2400	1150	537	1510
4	627	1040	872	1210	824	1300	1310	3690	3620	1030	537	2010
5	563	905	813	1100	788	1210	1700	2890	3750	1030	537	1860
6	542	818	782	1050	758	1190	2570	2410	4700	952	587	1330
7	518	743	1570	983	734	1640	3800	2180	5090	884	537	1060
8	500	691	2490	911	716	2510	4570	2270	4460	830	521	1120
9	487	671	2310	862	734	2670	3340	2330	3180	806	510	926
10	549	639	1820	820	1450	2170	2600	2710	2770	776	505	806
11	679	623	1670	796	2080	1780	2350	2660	2710	758	500	722
12	619	603	1530	896	3730	1600	2120	2170	2640	818	495	656
13	556	576	1450	878	3660	1430	2450	2040	2630	788	490	609
14	521	556	1380	864	2330	1270	2240	2130	2530	740	485	576
15	497	735	2100	1110	1870	1190	2040	1980	2350	716	475	548
16	478	2882	2650	2020	1690	1120	2130	1860	2150	716	465	532
17	463	4230	2080	6360	1830	1020	1950	1750	2240	794	460	521
18	448	3520	2180	14100	2220	1000	1810	1730	2350	826	455	500
19	436	2220	1800	7430	1890	1050	1650	1680	2300	716	445	537
20	424	1780	1570	4170	1700	1000	1510	1710	2060	674	425	806
21	412	1520	1460	2970	1680	1080	1440	2590	1850	644	415	1910
22	406	1350	1370	2340	1810	1330	1580	2480	1930	632	410	1420
23	397	1140	1590	1970	1760	1650	2670	2650	1780	620	405	1200
24	397	1320	1400	1740	1560	1570	4830	2430	1600	603	505	1490
25	863	3950	1610	1550	1500	1450	6470	2160	1600	598	1020	1460
26	1310	2390	7120	1420	1450	1560	5800	2290	1490	603	1180	1210
27	813	1830	7190	1280	1700	2160	4190	2090	1350	598	920	1020
28	687	1570	3940	1180	1870	1810	3690	1930	1260	603	933	890
29	735	1350	2790	1100	---	1600	3920	1820	1180	614	2740	908
30	651	1180	2260	1030	---	1460	3720	1710	1100	581	2370	952
31	1620	---	1910	1000	---	1380	---	1980	---	559	1580	---
TOTAL	19081	47092	64687	67600	45086	46950	82270	75290	75150	23849	22529	31123
MEAN	616	1570	2087	2181	1610	1515	2742	2429	2505	769	727	1037
MAX	1620	4230	7190	14100	3730	2670	6470	4580	5090	1150	2740	2010
MIN	397	556	782	796	716	1000	1210	1680	1100	559	405	500
CFSM	1.74	4.42	5.88	6.14	4.54	4.27	7.72	6.84	7.06	2.17	2.05	2.92
IN.	2.00	4.93	6.78	7.08	4.72	4.92	8.62	7.89	7.87	2.50	2.36	3.26
AC-FT	37850	93410	128300	134100	89430	93130	163200	149300	149100	47300	44690	61730

CAL YR 1976 TOTAL 901637 MEAN 2463 MAX 9760 MIN 397 CFSM 6.94 IN 94.48 AC-FT 1788000
WTR YR 1977 TOTAL 600707 MEAN 1646 MAX 14100 MIN 397 CFSM 4.64 IN 62.95 AC-FT 1192000

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA

LOCATION.--Lat 47°50'15", long 121°39'56", in SW¼SW¼ sec.9, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 2.0 mi (3.2 km) southeast of Gold Bar, 7.3 mi (11.7 km) upstream from Wallace River, and at mile 43.0 (69.2 km).

DRAINAGE AREA.--535 mi² (1,386 km²).

PERIOD OF RECORD.--September 1928 to current year. Chemical analyses, July 1959 to September 1970, at site 0.7 mi (1.1 km) upstream from gaging station.

REVISED RECORDS.--WSP 1316: 1932-35(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 209.26 ft (63.782 m) above mean sea level.

REMARKS.--Records good. No regulation. Some small diversions above station.

AVERAGE DISCHARGE.--49 years, 3,990 ft³/s (113.0 m³/s) 101.28 in/yr (2,573 mm/yr), 2,891,000 acre-ft/yr (3,560 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,700 ft³/s (2,510 m³/s) Dec. 21, 1933, gage height, 21.3 ft (6.49 m), from rating curve extended above 32,000 ft³/s (906 m³/s); minimum, 315 ft³/s (8.92 m³/s) Nov. 29, 1952; minimum gage height, 2.73 ft (0.832 m) Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 19,000 ft³/s (538 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*34,700	983	*14.17	4.319

Minimum discharge, 615 ft³/s (17.4 m³/s) Oct. 24, gage height, 3.52 ft (1.073 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	942	4940	1770	2540	1530	2690	2100	6440	5700	1720	897	2060
2	970	2620	1630	2210	1450	2370	2010	7350	4890	1800	888	1680
3	1200	1940	1510	2040	1350	2230	1890	7420	4070	1820	879	2620
4	1060	1630	1420	1880	1290	2010	2020	6060	6160	1650	87[illegible]	3360
5	942	1430	1320	1660	1240	1870	2710	4810	6320	1740	870	3170
6	868	1270	1300	1580	1160	1840	4280	3970	7770	1600	942	2230
7	846	1160	2520	1490	1130	2630	6250	3620	8300	1480	862	1830
8	806	1100	4300	1380	1110	3970	7400	3760	7230	1390	830	1780
9	783	1040	4030	1310	1140	4240	5430	3930	5230	1360	806	1560
10	1000	1030	2990	1240	2300	3460	4200	4640	4600	1300	748	1380
11	1320	970	2690	1220	3420	2800	3750	4420	4520	1270	783	1260
12	1140	915	2480	1430	6060	2530	3390	3570	4380	1390	776	1170
13	990	862	2400	1380	6060	2230	4070	3360	4380	1340	776	1100
14	897	830	2310	1350	3750	1990	3640	3480	4260	1240	762	1040
15	838	1220	3440	1810	2970	1900	3300	3240	3910	1200	741	980
16	783	4680	4940	3440	2660	1770	3420	3050	3570	1180	727	933
17	755	7450	3640	11600	2890	1640	3120	2830	3750	1380	713	906
18	727	6180	3840	26400	3570	1600	2840	2800	3950	1380	706	870
19	699	3660	3020	11500	3020	1700	2560	2750	3820	1200	699	942
20	678	2750	2570	6530	2660	1600	2340	2800	3390	1130	685	1540
21	657	2280	2310	4730	2650	1720	2240	4500	2990	1070	671	3200
22	643	2110	2110	3760	2860	2060	2530	4220	3170	1040	671	2300
23	629	1860	2350	3130	2770	2630	4560	4480	2880	1020	664	1980
24	629	2010	2100	2710	2420	2500	8070	4100	2560	990	888	2500
25	1450	6890	2330	2400	2330	2280	10500	3550	2570	990	2040	2420
26	2160	4050	11500	2170	2200	2410	9310	3860	2370	990	2080	2010
27	1380	2920	12300	1980	2620	3510	6750	3440	2160	970	1720	1720
28	1190	2420	6560	1820	2920	2920	5990	3170	2020	1000	1630	1560
29	1250	2140	4600	1700	---	2510	6360	2970	1880	1100	6820	1590
30	1090	1940	3620	1600	---	2270	6090	2780	1770	990	4830	1680
31	2450	---	2990	1570	---	2160	---	3390	---	924	2920	---
TOTAL	31792	76347	106890	111560	71550	74040	133120	124760	124550	39654	40953	53371
MEAN	1026	2545	3448	3599	2555	2388	4437	4025	4152	1279	1321	1779
MAX	2450	7450	12300	26400	6060	4240	10500	7420	8300	1820	6820	3360
MIN	629	830	1300	1220	1110	1600	1890	2750	1770	924	664	870
CFSM	1.92	4.76	6.45	6.73	4.78	4.46	8.29	7.52	7.76	2.39	2.47	3.33
IN.	2.21	5.31	7.43	7.76	4.98	5.15	9.26	8.67	8.66	2.76	2.85	3.71
AC-FT	63060	151400	212000	221300	141900	146900	264000	247500	247000	78650	81230	105900

CAL YR 1976 TOTAL 1449846 MEAN 3961 MAX 16700 MIN 629 CFSM 7.40 IN 100.81 AC-FT 2876000
WTR YR 1977 TOTAL 988587 MEAN 2708 MAX 26400 MIN 629 CFSM 5.06 IN 68.74 AC-FT 1961000

12135000 WALLACE RIVER AT GOLD BAR, WA

LOCATION.--Lat 47°51'50", long 121°41'47", in NW¼NE¼ sec.6, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 30 ft (9 m) downstream from highway bridge, 0.5 mi (0.8 km) north of Gold Bar, 1.3 mi (2.1 km) upstream from Olney Creek, and at mile 5.8 (9.3 km).

DRAINAGE AREA.--19.0 mi² (49.2 km²).

PERIOD OF RECORD.--October 1928 to September 1933, July 1946 to November 1976, August to September 1977. Monthly discharge only for some periods, published in WSP 1316. Water temperatures July 1955 to September 1972.

REVISED RECORDS.--WSP 1316: 1930(M), 1932-33(M). WSP 1932: Drainage area. WRD Wash. 1974: 1971-73(P).

GAGE.--Water-stage recorder. Datum of gage is 174.08 ft (53.060 m) above mean sea level. December 1928 to Sept. 30, 1933, nonrecording gage 50 ft (15 m) upstream at different datum. July 25, 1946, to Sept. 19, 1958, water-stage recorder on left bank at present site and datum.

REMARKS.--Records good. Flow affected by some natural storage in Wallace Lake. No diversion above station.

AVERAGE DISCHARGE.--35 years (water years 1929-33, 1947-76), 165 ft³/s (4.673 m³/s), 117.93 in/yr (2,995 mm/yr) 119,500 acre-ft/yr (147 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft³/s (96.3 m³/s) Jan. 5, 1969, gage height, 8.37 ft (2.551 m); minimum, 5.8 ft³/s (0.16 m³/s) Aug. 25, 29, 30, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,420 ft³/s (40.2 m³/s) and maximum (*) observed and from inside high-water mark:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Aug. 29	1105	*1,990	56.4	*8.27	2.521

Minimum discharge during period Oct. 1 to Nov. 21, 1976 and Aug. 30 to Sept. 30, 1977, 22 ft³/s (0.62 m³/s) Oct. 23, 24, gage height, 3.41 ft (1.039 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	125									---	128
2	33	69									---	108
3	60	58									---	167
4	37	51									---	187
5	30	47									---	121
6	28	44									---	93
7	26	41									---	80
8	25	40									---	71
9	24	39									---	66
10	118	36									---	61
11	97	33									---	57
12	62	31									---	53
13	46	29									---	51
14	39	28									---	48
15	35	58									---	46
16	32	367									---	45
17	30	357									---	44
18	28	161									---	41
19	27	102									---	49
20	26	84									---	139
21	25	78									---	210
22	24	---									---	104
23	23	---									---	108
24	23	---									---	167
25	296	---									---	130
26	147	---									---	96
27	73	---									---	80
28	69	---									---	71
29	71	---									---	91
30	57	---									370	133
31	89	---									182	---
TOTAL	1726	---									---	2845
MEAN	55.7	---									---	94.8
MAX	296	---									---	210
MIN	23	---									---	41
CFSM	2.93	---									---	4.99
IN.	3.38	---									---	5.57
AC-FT	3420	---									---	5640

12137200 ELK CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°58'14", long 121°33'12", in NW¼SW¼ sec.29, T.29 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 250 ft (76 m) downstream from Boulder Creek, about 0.9 mi (1.4 km) above mouth, and 14.2 mi (22.8 km) northeast of Sultan.

DRAINAGE AREA.--11.4 mi² (29.5 km²).

PERIOD OF RECORD.--November 1976 to September 1977.

GAGE.--Water-stage recorder. Altitude of gage 1,600 ft (488 m), from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period November 1976 to September 1977, 1,960 ft³/s (55.5 m³/s) Jan. 18, gage height, 7.09 ft (2.161 m); minimum, 8.7 ft³/s (0.246 m³/s) Aug. 18, 19, 20, 21, 22, 23, gage height, 0.97 ft (0.296 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	37	42	33	70	37	200	287	31	15	65
2		---	34	37	28	55	37	291	174	46	14	67
3		---	30	33	24	49	37	275	127	43	14	150
4		---	27	30	22	42	51	177	327	48	13	191
5		---	24	26	22	39	119	134	235	58	13	103
6		---	30	24	20	42	220	113	279	41	13	67
7		---	127	22	19	112	345	115	227	32	12	53
8		---	245	20	19	123	253	123	156	29	12	44
9		---	133	18	21	93	141	135	109	28	11	37
10		---	87	17	135	65	101	162	109	27	11	33
11		---	97	19	119	52	106	135	106	34	11	30
12		---	81	34	330	46	95	98	103	44	10	27
13		---	90	27	170	41	131	92	106	34	10	26
14		---	71	27	83	35	96	113	98	28	9.8	23
15		---	269	81	60	33	84	98	84	25	9.6	22
16		---	140	247	65	30	90	94	83	24	9.3	21
17		---	138	798	103	27	73	84	98	50	8.9	20
18		---	127	1630	128	27	65	96	97	33	8.9	19
19		---	80	239	83	26	57	87	78	25	8.7	32
20		---	61	119	70	24	52	97	63	22	8.7	156
21		---	52	84	73	31	60	249	65	21	8.7	194
22		---	47	65	79	48	168	165	98	20	8.7	88
23		---	50	52	65	83	315	153	62	19	12	82
24		124	41	45	55	64	488	133	55	17	35	138
25		269	94	40	49	51	401	108	54	17	202	95
26		92	766	34	44	52	332	147	43	17	97	65
27		63	342	31	80	65	185	108	39	15	67	51
28		51	124	28	92	52	180	98	35	16	180	43
29		45	82	26	---	43	189	92	32	25	683	55
30		41	63	24	---	41	180	84	31	19	216	71
31		---	51	30	---	40	---	203	---	16	98	---
TOTAL		---	3640	3949	2091	1601	4668	4239	3460	904	1830.3	2064
MEAN		---	117	127	74.7	51.6	156	137	115	29.2	59.0	68.8
MAX		---	766	1630	330	123	488	291	327	58	683	194
MIN		---	24	17	19	24	37	84	31	15	8.7	19
CFSM		---	10.3	11.1	6.55	4.53	13.7	12.0	10.1	2.56	5.18	6.04
IN.		---	11.88	12.89	6.82	5.22	15.23	13.83	11.29	2.95	5.97	6.73
AC-FT		---	7220	7830	4150	3180	9260	8410	6860	1790	3630	4090

12137260 WILLIAMSON CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°59'09", long 121°36'00", in NW¼SW¼ sec.24, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 0.4 mi (0.6 km) upstream from mouth, and 13.0 mi (20.9 km) northeast of Sultan.

DRAINAGE AREA.--15.6 mi^2 (40.4 km^2).

PERIOD OF RECORD.--November 1976 to September 1977.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft (427 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period November 1976 to September 1977, 3,060 ft^3/s (86.7 m^3/s) Jan. 18, gage height, 6.46 ft (1.969 m); minimum, 28 ft^3/s (0.79 m^3/s) Aug. 25, gage height, 1.40 ft (0.427 m); minimum gage height, 1.06 ft (0.323 m) Jan. 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, NOVEMBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	68	92	59	113	65	256	318	62	53	126
2		---	62	79	51	96	65	348	240	79	51	124
3		---	54	68	46	90	65	379	193	77	50	187
4		---	48	60	43	79	84	307	367	84	48	277
5		---	44	53	40	74	148	243	300	72	54	178
6		---	46	48	38	72	236	196	307	62	53	133
7		---	148	43	36	181	400	199	294	56	46	108
8		---	360	39	35	162	352	187	243	54	44	92
9		---	266	35	35	154	253	187	176	54	41	79
10		---	196	33	147	115	196	211	153	53	40	68
11		---	208	38	144	98	187	199	146	59	39	60
12		---	176	102	375	94	159	159	133	72	38	54
13		---	173	74	283	83	217	146	133	60	38	48
14		---	146	74	159	70	159	159	131	56	38	46
15		---	314	156	122	67	146	153	122	53	35	43
16		---	249	307	108	60	156	151	115	53	35	40
17		---	277	846	138	56	129	133	119	88	34	36
18		---	253	1760	162	54	119	129	126	72	33	35
19		---	178	452	122	54	104	119	124	62	33	47
20		---	143	246	106	50	94	119	110	57	32	159
21		---	120	176	104	81	98	280	102	54	30	196
22		---	102	133	164	94	159	208	117	53	29	122
23		---	106	113	126	146	270	205	104	50	35	136
24		151	86	96	100	122	390	211	96	48	75	233
25		304	157	83	90	100	406	170	94	47	253	173
26		162	807	74	83	94	430	205	84	47	141	129
27		122	434	65	170	120	300	176	75	47	148	106
28		102	240	59	143	95	277	170	70	48	297	90
29		88	176	53	---	78	263	148	65	104	631	102
30		79	136	48	---	72	243	131	60	65	270	102
31		---	113	59	---	69	---	199	---	57	170	---
TOTAL		---	5886	5564	3229	2893	6170	6083	4717	1905	2914	3329
MEAN		---	190	179	115	93.3	206	196	157	61.5	94.0	111
MAX		---	807	1760	375	181	430	379	367	104	631	277
MIN		---	44	33	35	50	65	119	60	47	29	35
CFSM		---	12.2	11.5	7.37	5.98	13.2	12.6	10.1	3.94	6.03	7.12
IN.		---	14.03	13.27	7.70	6.90	14.71	14.50	11.25	4.54	6.95	7.94
AC-FT		---	11670	11040	6400	5740	12240	12070	9360	3780	5780	6600

12137300 SPADA LAKE NEAR STARTUP, WA

LOCATION.--Lat 47°58'28", long 121°41'10", in NW¼ sec.29, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, Snoqualmie National Forest, on right bank at Culmback Dam on Sultan River, 1.7 mi (2.7 km) downstream from South Fork, 7.8 mi (12.6 km) north of Startup and at mile 16.5 (26.5 km).

DRAINAGE AREA.--68.3 mi^2 (176.9 km^2).

PERIOD OF RECORD.--April 1965 to current year.

GAGE.--Nonrecording gage. Datum of gage is at mean sea level (levels by Snohomish County P.U.D. No. 1).

REMARKS.--Reservoir is formed by earth-fill dam completed to elevation 1,408 ft (429.16 m) in 1965; storage began Apr. 5, 1965. Capacity, 34,500 acre-ft (42.5 hm^3) between elevations 1,250 ft (381.0 m) and 1,360 ft (414.5 m), crest of spillway. No dead storage. Figures given herein represent total contents. Spada Lake is used to regulate the flow of the Sultan River to supplement city of Everett water supply

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 40,470 acre-ft (49.9 hm^3) Dec. 2, 1975, elevation, 1,367.3 ft (416.75 m); minimum observed since reservoir was first filled, 4,250 acre-ft (5.24 hm^3) Sept. 30, 1967, elevation, 1,301.28 ft (396.630 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39,060 acre-ft (48.2 hm^3) Jan. 18, elevation, 1,365.7 ft (416.27 m); minimum observed, 17,300 acre-ft (21.3 hm^3) Nov. 15, elevation, 1,334.2 ft (406.66 m).

REVISIONS.--The monthend elevation and contents at 2400 for September 30, 1976 were published in error in the report for 1976. The correct figures should have been as follows:

Sept. 30, 1976 at 2400, elevation, 1,350.9 ft; contents, 27,630 acre-ft; change in contents, -6,870 acre-ft; change in contents for 1976 water year, +2,730 acre-ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,350.9	27,630	-
Oct. 31	1,339.1	20,060	-7,570
Nov. 30	1,355.4	30,820	+10,760
Dec. 31	1,360.1	34,580	+3,760
CAL YR 1976	-	-	0
Jan. 31	1,345.9	24,140	-10,440
Feb. 28	1,354.7	30,290	+6,150
Mar. 31	1,360.3	34,740	+4,450
Apr. 30	1,361.0	35,300	+560
May 31	1,361.1	35,380	+80
June 30	1,360.1	34,580	-800
July 31	1,358.7	33,460	-1,120
Aug. 31	1,360.8	35,140	+1,680
Sept. 30	1,360.2	34,660	-480
WTR YR 1977	-	-	+7,030

12138150 SULTAN RIVER BELOW CHAPLAIN CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°54'52", long 121°48'36", in NE¼SW¼ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank, 0.8 mi (1.3 km) downstream from Chaplain Creek, 3.5 mi (5.6 km) north of Sultan, at river mi 5.1 (8.2 km).

DRAINAGE AREA.--92.6 mi² (239.8 km²).

PERIOD OF RECORD.--November 1974 to current year..

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 320 ft (98 m) from topographic map.

REMARKS.--Records good. City of Everett diverts about 127 ft³/s (3.60 m³/s) daily into Lake Chaplain for municipal use. Flow regulated at Spada Lake since Apr. 5, 1966.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s (697 m³/s) Dec. 2, 1975, gage height, 13.19 ft (4.020 m); minimum, 53 ft³/s (1.50 m³/s) Aug. 16, 17, 18, 20, 1977, gage height, 2.41 ft (0.735 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,700 ft³/s (388 m³/s) Jan. 18, gage height, 10.63 ft (3.240 m); minimum, 53 ft³/s (1.50 m³/s) Aug. 16, 17, 18, 20, gage height, 2.41 ft (0.735 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	319	253	410	405	279	492	960	1530	103	81	531
2	311	266	242	390	400	249	431	1350	1230	117	69	362
3	361	271	241	370	305	297	380	1930	873	150	69	449
4	240	270	237	345	325	236	370	1820	1400	201	66	1060
5	241	264	237	317	266	217	519	1360	1440	236	73	1000
6	250	261	250	335	266	217	1010	937	1360	224	71	670
7	261	259	680	335	257	283	1890	782	1280	176	74	358
8	261	265	560	331	249	365	1760	755	1040	133	70	345
9	261	328	430	331	236	998	1290	716	710	95	70	202
10	303	307	355	331	224	908	906	838	567	115	72	151
11	269	288	625	322	220	871	775	1050	531	115	68	128
12	261	272	607	536	253	845	864	782	470	152	68	145
13	273	253	562	488	305	503	901	633	459	142	62	216
14	270	253	507	430	261	400	838	627	453	126	61	198
15	267	290	859	488	236	365	671	591	420	101	61	220
16	262	331	1190	512	232	365	724	555	375	90	56	220
17	261	462	902	2700	245	292	639	525	385	155	53	217
18	261	525	1170	9390	232	288	567	585	420	198	54	217
19	261	479	682	2730	201	310	481	519	405	149	57	224
20	258	493	671	1390	220	292	480	481	335	112	56	288
21	255	482	377	937	205	320	360	960	288	101	60	420
22	253	476	319	854	209	395	431	965	335	95	64	390
23	253	395	507	838	205	684	965	824	320	88	70	390
24	253	317	472	1020	194	684	1550	975	236	88	110	831
25	391	640	539	1550	205	537	1090	762	209	88	256	782
26	484	528	3500	922	205	633	1050	838	186	88	255	531
27	428	368	3030	426	266	1130	1350	782	149	87	164	395
28	428	282	1290	426	297	768	1020	775	126	83	104	320
29	303	249	880	788	---	591	1010	710	103	113	2440	312
30	297	259	715	1130	---	497	915	597	90	101	2120	370
31	306	---	486	824	---	481	---	697	---	96	1060	---
TOTAL	9148	10472	23274	32209	7264	14880	26636	26061	17705	3924	8000	12230
MEAN	295	349	751	1039	259	480	888	840	590	127	258	408
MAX	484	640	3500	9390	405	1130	1890	1930	1530	236	2440	1060
MIN	240	249	237	317	194	217	360	481	90	83	53	128
AC-FT	18150	20770	46160	63890	14410	29510	52830	52080	35120	7780	15870	24260

CAL YR 1976 TOTAL 264494 MEAN 723 MAX 7600 MIN 221 AC-FT 524600
WTR YR 1977 TOTAL 192403 MEAN 527 MAX 9390 MIN 53 AC-FT 381600

12141100 SKYKOMISH RIVER AT MONROE, WA

LOCATION.--Lat 47°51'08", long 121°57'29", in SE¼SW¼ sec.6, T.27 N., R.7 E., Snohomish County, Hydrologic unit 17110009, at State Highway 203 bridge at Monroe, 0.1 mi (0.2 km) downstream from Woods Creek and at mile 25.0 (40.2 km).

DRAINAGE AREA.--834 mi² (2,160 km²).

PERIOD OF RECORD.--Water years 1965-69, 1974, October 1976 to September 1977.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to June 1969.
WATER TEMPERATURES: October 1966 to June 1969.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data for the bimonthly water-quality samples listed below furnished by Washington State Department of Ecology. Coliform analyses for the diel study were performed by the Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
11...	1140	2100	41	7.5	12.4	21	4	11.0	.04	.02	.01	.00
25...	1155	1370	50	7.4	9.5	13	1	11.4	.02	.02	.01	.00
NOV												
08...	1240	1770	48	7.2	9.0	17	1	11.1	.10	.02	.01	.00
16...	1145	2300	45	7.4	9.5	25	5	11.7	.16	.04	.01	.00
DEC												
06...	1220	2040	49	7.2	5.1	13	2	13.2	.20	.04	.00	.00
20...	1200	3800	40	7.1	4.6	17	3	13.5	.22	.04	.01	.00
JAN												
11...	1330	2050	46	7.2	2.6	8	3	13.3	.21	.05	.00	.00
24...	1225	4570	40	7.1	4.4	17	5	13.3	.25	.06	.01	.00
FEB												
01...	1240	2700	55	7.3	5.1	17	3	12.8	.04	.06	.01	.00
21...	1110	3500	42	7.1	5.7	33	2	12.6	.14	.02	.01	.00
MAR												
14...	1155	3500	49	7.3	5.1	13	3	12.8	.33	.10	.01	.00
29...	1240	4570	50	7.3	5.0	17	6	13.1	.39	.02	.01	.00
APR												
11...	1155	5400	37	7.2	8.3	13	3	12.6	.16	.03	.01	.00
25...	1220	1400	28	6.6	7.7	21	15	12.4	.13	.04	.06	.01
MAY												
09...	1335	5300	36	6.7	9.0	13	1	11.8	.12	.01	.01	.01
23...	1210	5000	31	7.0	9.7	8	2	11.5	.11	.05	.01	.00
JUN												
13...	1230	5350	38	7.2	12.4	17	1	10.7	.05	.03	.01	.00
27...	1200	2720	39	7.6	14.5	29	3	10.6	.10	.03	.00	.00
JUL												
05...	1205	2730	39	6.5	12.5	42	2	10.7	.10	.07	.01	.00
19...	1250	2010	40	7.3	15.0	13	1	10.2	.07	.03	.01	.00
AUG												
01...	1125	1210	60	7.1	19.6	13	5	9.4	.07	.03	.00	.00
09...	1045	1070	39	7.2	19.4	--	0	9.0	.07	.05	.01	.00
15...	1135	900	49	7.2	19.2	4	1	8.9	.08	.03	.01	.00
SEP												
06...	1135	3420	36	7.2	14.6	33	3	--	.15	.07	.01	.00
19...	1225	1340	47	7.4	12.6	13	2	10.4	.11	.06	.01	.00

12141100 SKYKOMISH RIVER AT MONROE, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./100 ML)	HARD-NESS (CA,MG) (MG/L)
AUG											
09...	1005	1070	39	7.2	19.6	0	9.0	97	B33	B2	18
09...	1345	1070	37	7.3	20.2	--	9.4	102	--	--	--
09...	1630	1070	37	7.4	21.0	1	9.5	106	<20	B3	--
09...	1905	1060	37	7.5	20.8	--	9.5	105	--	--	--
09...	2205	1060	37	7.3	20.6	0	9.0	99	B100	B12	--
10...	0045	1060	42	7.1	20.3	--	8.8	96	--	--	--
10...	0245	1050	43	7.3	20.0	1	8.5	93	B400	B160	--
10...	0455	1050	41	7.2	20.0	--	8.5	93	--	--	--
10...	0640	1040	40	7.2	19.6	--	8.5	91	--	--	--
10...	0855	1040	45	7.3	19.8	--	8.6	94	--	--	--

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
AUG										
09...	1	4.5	1.7	2.2	.5	21	0	17	2.1	1.6
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	21	0	17	1.3	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SUS-PENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
AUG										
09...	2.0	.0	6.0	29	0	.07	.05	.12	.01	.00
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	0	.07	.05	.11	.01	.00
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA

LOCATION.--Lat 47°29'10", long 121°38'48", in SW¼SE¼ sec.10, T.23 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.7 mi (1.1 km) downstream from Granite Creek, 6.4 mi (10.3 km) east of North Bend, and at mile 55.6 (89.5 km).

DRAINAGE AREA.--154 mi² (399 km²).

PERIOD OF RECORD.--February 1961 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 780 ft (238 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--16 years, 1,304 ft³/s (36.93 m³/s) 114.99 in/yr (2,921 mm/yr), 944,700 acre-ft/yr (1,160 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s (705 m³/s) Jan. 18, 1975, gage height, 13.67 ft (4.167 m); minimum, 130 ft³/s (3.68 m³/s) Oct. 25, 26, 27, 1974, gage height, 1.04 ft (0.317 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, reached a stage of 18.7 ft (5.70 m), from floodmarks, discharge, 49,000 ft³/s (1,390 m³/s) by slope-area measurement at site 6 miles (9.7 km) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft³/s (227 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 26	2200	8,510	241	8.51	2.594	Jan. 18	1200	*11,800	334	*9.72	2.963

Minimum discharge, 160 ft³/s (4.53 m³/s) Oct. 23, 24, gage height, 1.22 ft (0.372 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	270	2320	570	703	428	895	866	1700	2170	480	258	544
2	280	1130	529	623	397	745	692	2200	1740	520	255	641
3	340	789	483	572	367	740	626	2400	1370	560	250	730
4	270	653	439	521	346	634	698	1760	2350	620	258	1360
5	240	989	405	453	332	580	1020	1340	2140	740	263	1180
6	225	482	441	427	319	570	1620	1090	2610	620	289	746
7	210	419	2140	402	309	838	2320	1010	2520	560	255	581
8	200	393	2050	373	302	1230	2410	1120	2110	580	238	624
9	195	397	1490	358	314	1300	1600	1150	1490	480	235	569
10	310	372	1100	342	763	942	1190	1390	1270	440	231	628
11	370	345	941	348	1100	772	1110	1410	1270	450	226	382
12	380	323	842	575	2380	737	969	1080	1230	600	223	352
13	260	383	857	603	1990	662	1130	975	1230	540	223	327
14	240	288	824	567	1120	603	1010	1080	1170	480	219	310
15	220	382	1100	937	852	579	952	994	1100	440	209	295
16	210	2150	1370	2150	759	556	1190	912	996	480	197	280
17	200	2700	1040	5480	862	500	988	868	1050	600	191	270
18	190	1960	1130	8180	1200	497	863	920	1130	620	192	255
19	185	1170	881	3240	914	580	751	862	1090	480	192	285
20	180	902	739	1720	777	559	665	862	964	480	188	610
21	172	745	660	1250	756	665	653	1340	871	360	182	1640
22	165	660	660	988	782	775	885	1240	941	335	185	880
23	162	587	1090	823	766	996	1650	1350	855	313	187	760
24	170	691	822	708	655	842	2600	1460	726	302	339	1200
25	1200	3170	1060	626	637	750	2700	1190	741	302	709	1080
26	1320	1460	5380	568	642	1010	2400	1280	690	309	853	830
27	675	972	4330	517	922	1550	1600	1130	614	303	767	652
28	959	781	1850	474	1040	1030	1500	1100	588	304	690	580
29	601	675	1280	435	---	820	1700	1170	560	286	1010	640
30	491	617	1000	412	---	701	1550	988	510	276	1190	870
31	1370	---	828	411	---	691	---	1300	---	261	781	---
TOTAL	11780	28405	38331	35778	22026	24309	39848	38671	38076	13901	11456	19641
MEAN	380	947	1236	1154	787	784	1328	1247	1269	448	369	655
MAX	1370	3170	5380	8180	2380	1550	2700	2400	2610	740	1190	1640
MIN	162	288	405	342	302	497	626	862	510	261	182	295
CFSM	2.47	6.15	8.03	7.49	5.11	5.09	8.62	8.10	8.24	2.91	2.40	4.25
IN.	2.85	6.86	9.26	8.64	5.32	5.87	9.63	9.34	9.20	3.36	2.77	4.74
AC-FT	23370	56340	76030	70970	43690	48220	79040	76700	75520	27570	22720	38960

CAL YR 1976 TOTAL 431090 MEAN 1178 MAX 11100 MIN 162 CFSM 7.65 IN 104.14 AC-FT 855100
WTR YR 1977 TOTAL 322220 MEAN 883 MAX 8180 MIN 162 CFSM 5.73 IN 77.83 AC-FT 639100

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA

LOCATION.--Lat 47°36'58", long 121°42'44", in NW¼NW¼ sec.31, T.25 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi (1.0 km) upstream from Calligan Creek, 7.0 mi (11.3 km) northeast of town of Snoqualmie Falls, and at mile 9.2 (14.8 km).

DRAINAGE AREA.--64.0 mi² (165.8 km²).

PERIOD OF RECORD.--August 1929 to October 1949, water years 1950-60 (annual maximum), February 1961 to current year.

REVISED RECORDS.--WSP 1346: 1930-31(M), 1932, 1935, 1936-37(M), 1938, 1939-42(M), 1944, 1945-46(P), 1947, 1948(P), 1949(M). WSP 1736: 1952-54(M), 1955, 1958(M), 1943-45(M), 1947(M), drainage area. WSP 1932: 1950-54(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,150 ft (344 m), from topographic map. Prior to Oct. 10, 1949, water-stage recorder, and October 1949 to February 1951, crest-stage gage, at site 1,500 ft (460 m) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--36 years (water years 1930-49, 1962-77), 506 ft³/s (14.33 m³/s) 107.37 in/yr (2,727 mm/yr), 366,600 acre-ft/yr (452 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s (447 m³/s) Feb. 26, 1932, gage height, 17.5 ft (5.33 m), site and datum then in use, from rating curve extended above 2,200 ft³/s (62.3 m³/s) on basis of slope-area measurement at gage height 16.47 ft (5.020 m); minimum observed, 30 ft³/s (0.85 m³/s) Sept. 17-19, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1400	*5,320	151	*8.70	2.652

Minimum discharge, 48 ft³/s (1.359 m³/s) Aug. 19, 20, 21, 22, 25, gage height, 1.88 ft (0.573 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	909	202	260	208	404	306	705	968	150	80	237
2	86	426	188	240	185	327	285	916	670	166	76	196
3	141	279	176	220	170	318	262	996	524	183	74	396
4	109	224	162	200	162	279	294	720	975	189	72	565
5	99	193	152	180	156	255	488	538	856	242	69	436
6	93	178	164	164	140	252	844	432	910	207	67	273
7	89	153	987	155	142	420	1140	393	856	170	65	220
8	83	142	465	144	138	583	1020	444	670	156	62	312
9	81	135	583	134	139	542	865	464	472	142	61	227
10	120	125	396	130	354	376	486	576	432	136	59	180
11	153	116	362	137	488	389	524	583	420	140	57	160
12	128	109	305	241	982	366	448	428	488	183	56	152
13	107	103	312	230	755	270	552	379	393	170	54	136
14	97	88	306	235	393	252	468	476	379	148	53	127
15	91	167	584	522	297	242	436	420	367	136	52	118
16	86	1210	472	1210	276	235	583	375	315	125	51	112
17	83	1250	354	2520	354	218	468	358	344	107	50	107
18	79	765	488	3550	520	218	396	426	358	191	49	102
19	77	422	325	1300	351	240	337	368	324	156	48	110
20	74	329	270	715	291	228	300	351	282	136	48	107
21	72	273	265	520	300	262	297	670	285	123	48	655
22	71	207	265	412	291	330	452	524	360	115	48	361
23	68	238	400	340	285	446	856	547	273	108	56	279
24	67	294	320	294	255	319	1170	670	237	102	152	448
25	406	1490	390	260	245	337	1230	524	235	96	368	432
26	567	557	2350	237	230	386	1090	610	207	96	302	306
27	255	362	1080	216	452	524	715	500	189	92	337	242
28	210	280	605	200	529	400	675	542	176	91	354	220
29	248	268	467	185	---	318	710	583	164	91	533	250
30	200	222	361	170	---	280	640	464	156	87	551	306
31	634	---	305	160	---	282	---	610	---	83	337	---
TOTAL	4755	11632	15041	15505	9095	10288	18147	16588	13165	4400	4368	7852
MEAN	153	388	485	500	325	332	605	535	439	142	141	262
MAX	634	1490	2350	3550	982	583	1230	996	975	242	551	655
MIN	67	88	152	130	138	218	262	351	156	83	48	102
CFSM	2.39	6.06	7.58	7.81	5.08	5.19	9.45	8.36	6.86	2.22	2.20	4.09
IN.	2.76	6.76	8.74	9.01	5.29	5.99	10.55	9.64	7.65	2.56	2.54	4.56
AC-FT	9430	23070	29830	30750	18040	20430	35990	32900	26110	8730	8670	15570

CAL YR 1976 TOTAL 167625 MEAN 458 MAX 4870 MIN 67 CFSM 7.17 IN 97.55 AC-FT 332500
WTR YR 1977 TOTAL 130849 MEAN 358 MAX 3550 MIN 48 CFSM 5.59 IN 76.05 AC-FT 259500

12143400 SOUTH FORK SNOQUALMIE RIVER ABOVE ALICE CREEK, NEAR GARCIA, WA

LOCATION.--Lat 47°24'55", long 121°35'10", in SW¼SW¼ sec.6, T.22 N., R.10 E., King County, Hydrologic Unit 17110010, Snoqualmie National Forest, on left bank 0.4 mi (0.6 km) upstream from Alice Creek, 1.5 mi (2.4 km) southeast of Garcia, 11 mi (17.7 km) southeast of North Bend, and at mile 17.3 (27.8 km).

DRAINAGE AREA.--41.6 mi² (107.7 km²).

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October to November 1971.

GAGE.--Water-stage recorder. Datum of gage is 1,447.67 ft (441.250 m) above mean sea level (Washington Highway Department bench mark).

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--17 years, 310 ft³/s (8.779 m³/s), 101.20 in/yr (2,570 mm/yr), 224,600 acre-ft/yr (277 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,090 ft³/s (201 m³/s) Nov. 10, 1962, gage height, 11.96 ft (3.645 m); minimum, 25 ft³/s (0.71 m³/s) Oct. 25, 26, 27, 1974, gage height, 0.99 ft (0.302 m); minimum gage height, 0.60 ft (0.183 m) part of each day Aug. 17-23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in November and December 1959 reached stages of 14.7 ft (4.48 m) and 13.4 ft (4.08 m) respectively, from flood marks, discharges not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 26	2300	1610	45.6	3.56	1.085	Jan. 18	1300	*2,480	70.2	*4.43	1.350

Minimum discharge, 29 ft³/s (0.82 m³/s) part of each day Aug. 17-23, gage height, 0.60 ft (0.183 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	430	128	199	107	202	213	480	440	86	42	100
2	60	267	117	173	100	182	188	523	376	98	42	88
3	66	230	112	158	94	182	182	529	317	88	40	137
4	58	182	102	140	88	164	206	410	576	86	40	287
5	60	155	96	120	84	155	275	322	485	82	39	216
6	57	131	152	107	80	161	425	271	516	80	39	146
7	56	117	435	105	76	256	442	250	490	76	38	117
8	52	112	410	98	76	263	476	283	380	72	36	131
9	50	117	290	94	76	267	460	299	287	70	36	105
10	60	105	261	88	216	213	335	262	263	68	35	92
11	60	90	227	86	248	185	309	335	255	73	34	85
12	58	90	198	88	828	176	279	267	248	74	34	78
13	54	84	195	90	501	161	358	248	237	70	32	72
14	50	80	192	96	290	149	267	267	223	66	32	68
15	49	107	267	125	237	137	254	248	212	62	31	64
16	47	520	290	291	267	128	283	236	180	60	31	60
17	46	612	246	1060	271	117	241	223	180	72	30	58
18	44	460	267	1700	308	120	216	237	185	60	30	57
19	43	271	230	793	251	128	195	227	173	58	30	62
20	43	237	198	455	223	128	182	234	152	57	30	135
21	41	200	179	335	216	143	182	313	146	54	30	317
22	41	164	170	263	243	170	248	277	146	54	30	188
23	41	137	185	236	192	185	455	317	130	50	34	182
24	44	170	161	223	173	185	772	295	117	48	60	237
25	282	524	192	182	170	170	877	259	115	49	110	220
26	295	267	655	158	166	261	751	287	107	49	150	179
27	194	227	982	144	199	331	496	251	100	47	128	149
28	161	188	675	134	235	234	675	248	96	47	122	137
29	158	161	335	128	---	185	695	255	90	47	164	149
30	125	143	263	107	---	176	460	227	86	44	228	164
31	362	---	230	107	---	176	---	362	---	43	140	---
TOTAL	2834	6600	8442	8070	5957	5632	11330	9360	7354	1986	1896	4089
MEAN	91.4	220	272	260	213	182	378	302	245	64.1	61.2	136
MAX	362	612	982	1700	828	331	877	529	576	98	228	317
MIN	41	80	96	86	76	117	182	223	86	43	30	57
CFSM	2.20	5.29	6.54	6.25	5.12	4.38	9.09	7.26	5.89	1.54	1.47	3.27
IN.	2.53	5.90	7.55	7.22	5.33	5.04	10.13	8.37	6.58	1.78	1.70	3.64
AC-FT	5620	13090	16740	16010	11820	11170	22470	18560	14590	3940	3760	8110

CAL YR 1976 TOTAL 108960 MEAN 298 MAX 2560 MIN 41 CFSM 7.16 IN 97.42 AC-FT 216100
WTR YR 1977 TOTAL 73520 MEAN 201 MAX 1700 MIN 30 CFSM 4.83 IN 65.75 AC-FT 145800

12143700 BOXLEY CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'58", long 121°45'04", in NE¼SW¼ sec.35, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on left bank 1.7 mi (2.7 km) northeast of Cedar Falls and 2.5 mi (4.0 km) upstream from mouth.

DRAINAGE AREA.--1.57 mi² (4.07 km²).

PERIOD OF RECORD.--August 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (372 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--32 years, 25.7 ft³/s (0.728 m³/s) 18,620 acre-ft/yr (23.0 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 182 ft³/s (5.15 m³/s) Dec. 22, 23, 1946; maximum gage height recorded, 2.68 ft (0.817 m) Dec. 6, 1975; no flow part or all of each day Oct. 28 to Nov. 9, 1966, Nov. 5-8, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23 ft³/s (0.65 m³/s) part or all of each day May 26, June 3-5, 11-19, gage height, 2.27 ft (0.692 m); minimum, 0.42 ft³/s (0.012 m³/s) part or all of each day Dec. 20-22, Jan. 7-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	1.1	.57	.51	.70	2.9	3.1	16	22	20	9.5	2.7
2	5.7	1.1	.54	.48	.75	2.9	3.1	16	22	20	8.9	2.7
3	5.3	.99	.54	.48	.80	2.9	2.9	17	22	19	8.4	2.7
4	5.0	.99	.54	.45	.92	2.9	2.9	17	22	18	8.4	2.5
5	4.7	.92	.51	.45	.90	3.1	2.9	18	22	18	7.9	2.5
6	4.5	.92	.54	.45	1.1	3.1	3.1	19	22	18	7.5	2.4
7	4.3	.99	.57	.45	1.2	3.1	3.1	20	22	18	7.0	2.4
8	4.2	.92	.54	.42	1.3	3.1	3.1	20	22	18	7.0	2.2
9	4.0	.86	.51	.42	1.4	3.3	3.1	21	22	17	6.6	2.2
10	3.8	.86	.51	.42	1.6	3.1	3.3	21	22	17	6.2	2.1
11	3.7	.83	.48	.42	1.6	3.1	3.3	21	22	17	6.2	2.1
12	3.6	.75	.48	.48	1.9	3.3	3.5	21	23	17	5.8	1.9
13	3.5	.75	.48	.45	1.9	3.3	3.5	21	23	16	5.8	1.9
14	3.3	.70	.48	.45	2.1	3.3	3.8	21	23	16	5.5	1.8
15	3.1	.70	.48	.48	2.2	3.3	4.0	21	22	16	5.5	1.8
16	2.9	.79	.45	.51	2.2	3.3	4.3	21	23	15	5.1	1.8
17	2.8	.79	.45	.51	2.4	3.1	4.5	21	23	15	4.8	1.6
18	2.6	.61	.45	.57	2.4	3.3	4.8	21	23	15	4.8	1.6
19	2.3	.61	.45	.54	2.4	3.1	5.1	21	22	15	4.5	1.6
20	2.1	.61	.42	.57	2.4	3.1	5.8	21	22	14	4.3	1.6
21	1.9	.61	.42	.57	2.5	3.1	6.6	21	22	14	4.3	1.6
22	1.7	.61	.45	.57	2.5	3.1	7.5	22	22	13	4.0	1.5
23	1.3	.57	.54	.57	2.5	3.3	8.4	22	22	13	4.0	1.5
24	1.2	.61	.45	.57	2.5	3.1	9.5	22	21	13	4.0	1.5
25	1.4	.75	.48	.57	2.5	3.1	10	22	21	12	3.8	1.6
26	1.3	.65	.57	.57	2.5	3.1	11	22	21	12	3.8	1.4
27	1.2	.61	.51	.61	2.7	3.1	12	22	21	12	3.5	1.3
28	1.2	.61	.51	.61	2.7	3.1	13	22	21	11	3.3	1.3
29	1.1	.57	.54	.65	---	3.1	14	22	20	11	3.1	1.3
30	1.1	.57	.51	.65	---	3.1	15	22	20	10	3.1	1.2
31	1.2	---	.51	.70	---	3.1	---	22	---	9.5	2.9	---
TOTAL	92.1	22.76	15.60	16.15	52.66	96.9	180.2	636	657	469.5	169.5	56.1
MEAN	2.97	.76	.50	.52	1.88	3.13	6.01	20.5	21.9	15.1	5.47	1.87
MAX	6.1	1.1	.57	.70	2.7	3.3	15	22	23	20	9.5	2.7
MIN	1.1	.57	.42	.42	.70	2.9	2.9	16	20	9.5	2.9	1.2
AC-FT	183	45	31	32	104	192	357	1260	1300	931	336	111

CAL YR 1976 TOTAL 9433.02 MEAN 25.8 MAX 78 MIN .42 AC-FT 18710
WTR YR 1977 TOTAL 2464.33 MEAN 6.75 MAX 23 MIN .42 AC-FT 4890

12143800 RATTLESNAKE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'39", long 121°46'29", in SW¼SW¼ sec.34, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on southeast shore and 0.6 mi (1.0 km) northeast of Cedar Falls.

DRAINAGE AREA.--1.86 mi² (4.82 km²).

PERIOD OF RECORD.--November to December 1945 (fragmentary), January 1953 to current year. Extremes prior to October 1960 published in WSP 1932 and daily gage heights are available in the district office.

GAGE.--Nonrecording gage. Datum of gage is 7.25 ft (2.210 m) above mean sea level (levels by city of Seattle).

REMARKS.--No diversion or regulation.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 911.80 ft (277.917 m) Nov. 25, 26, 1959; minimum observed, 852.80 ft (259.933 m) Jan. 9, 1955, but may have been less during periods Dec. 13, 1965, to Jan. 3, 1966, and Nov. 10 to Dec. 23, 1970, when water was below gage.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 904.36 ft (275.649 m) June 18, 21, 22; minimum observed,869.00 ft (264.871 m) Jan. 19, 20, 21.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	901.50	888.91	877.80	871.30	871.66	877.92	886.91	893.20	902.22	904.06	900.98	894.36
2	901.20	888.38	877.38	871.20	871.75	878.26	887.12	893.56	902.44	904.00	900.80	894.10
3	901.00	888.00	877.02	871.12	871.90	878.52	887.32	894.00	902.64	904.00	900.66	893.90
4	900.66	887.42	876.72	871.06	872.18	878.82	887.50	894.41	902.92	903.97	900.46	893.71
5	900.36	887.06	876.38	871.00	872.42	879.18	887.64	894.80	903.11	903.93	900.28	893.46
6	900.00	886.70	876.12	870.86	872.54	879.55	887.82	895.16	903.28	903.92	900.08	893.18
7	899.70	886.20	876.00	870.70	872.60	879.82	887.90	895.54	903.42	903.84	899.00	892.94
8	898.26	885.80	875.68	870.60	872.92	880.22	888.10	895.90	903.60	903.78	899.66	892.70
9	898.90	885.45	875.40	870.35	873.10	880.55	888.25	896.24	903.76	903.70	898.42	892.44
10	898.56	885.00	875.10	870.25	873.40	880.88	888.36	896.54	903.88	903.64	898.12	892.16
11	898.14	884.70	874.85	870.10	873.40	881.15	888.50	896.92	903.98	903.59	897.82	891.90
12	897.76	884.20	874.57	870.10	873.40	881.56	888.62	897.20	904.08	903.56	897.54	891.59
13	897.30	883.75	874.32	869.90	873.60	881.88	888.76	897.48	904.12	903.44	897.10	891.30
14	896.90	883.40	874.00	869.85	873.82	882.16	888.90	897.78	904.18	903.38	897.84	891.00
15	896.46	882.98	873.90	869.82	874.10	882.42	889.02	898.08	904.26	903.30	897.62	890.68
16	896.00	882.80	873.68	869.70	874.38	882.72	889.20	898.36	904.30	903.22	897.51	890.40
17	895.58	882.22	873.40	869.10	874.66	882.98	889.36	898.62	904.34	903.16	897.45	890.08
18	895.12	881.68	873.23	869.10	874.98	883.28	889.52	898.92	904.36	903.06	897.40	889.92
19	894.68	881.50	872.88	869.00	875.22	883.60	889.72	899.18	904.34	902.96	897.14	889.42
20	894.36	880.90	872.65	869.00	875.60	883.82	889.96	899.44	904.34	902.84	896.90	889.19
21	893.70	880.64	872.40	869.00	875.85	884.08	890.18	899.72	904.36	902.70	896.64	889.08
22	893.22	880.34	872.15	869.08	876.12	884.30	890.43	899.96	904.36	902.58	896.40	888.78
23	892.72	879.96	872.10	869.12	876.38	884.56	890.68	900.18	904.32	902.44	896.16	888.50
24	892.26	879.55	871.90	869.30	876.74	884.78	890.92	900.45	904.28	902.31	896.10	888.34
25	891.82	879.00	871.70	870.05	876.86	885.00	891.20	900.71	904.26	902.18	895.84	888.10
26	891.44	878.03	871.40	870.30	877.10	885.28	891.50	900.96	904.24	901.99	895.68	887.94
27	890.88	878.76	871.15	870.60	877.40	885.57	891.78	901.14	904.20	901.82	895.48	887.62
28	890.46	878.60	---	870.85	877.60	885.83	892.14	901.38	904.16	901.66	895.24	887.41
29	890.02	878.20	871.50	871.11	---	886.12	892.48	901.58	904.12	901.50	895.04	887.20
30	889.52	877.90	871.50	871.32	---	886.38	892.82	901.78	904.08	901.34	894.85	886.98
31	889.04	---	871.42	871.46	---	886.66	---	902.00	---	901.16	894.60	---
MEAN	895.73	882.94	---	870.20	874.35	882.51	889.42	898.10	903.87	903.00	897.57	890.61
MAX	901.50	888.91	---	871.46	877.60	886.66	892.82	902.00	904.36	904.06	900.98	894.36
MIN	889.04	877.90	---	869.00	871.66	877.92	886.91	893.20	902.22	901.16	894.60	886.98

12144400 SNOQUALMIE RIVER AT SNOQUALMIE, WA

LOCATION.--Lat 47°31'37", long 121°48'40", on east line of NW¼ sec.32, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, at 7th Avenue bridge in Meadowbrook, 1 mi (1.6 km) east of Snoqualmie and at mile 42.3 (68.1 km).

DRAINAGE AREA.--375 mi² (971 km²).

PERIOD OF RECORD.--Water years 1959-70, October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
11...	0955	744	45	7.2	11.8	17	3	10.0	.08	.03	.01	.01
25...	1000	572	60	7.3	8.8	13	1	10.5	.09	.02	.01	.01
NOV												
09...	1100	794	55	7.1	9.2	17	1	9.5	.16	.03	.01	.00
16...	1010	970	51	7.1	9.7	42	45	10.7	.14	.03	.01	.00
DEC												
05...	1100	950	50	7.2	5.2	8	2	12.4	.24	.06	.01	.00
20...	1035	1670	39	7.1	5.1	17	2	12.5	.22	.04	.01	.00
JAN												
11...	1200	910	52	7.2	2.5	8	3	--	.24	.05	.01	.00
24...	1100	1780	45	7.0	3.7	13	3	12.8	.23	.03	.01	.00
FEB												
01...	1120	1170	50	7.1	5.1	13	3	12.6	.20	.07	.01	.00
21...	0930	1770	39	6.9	5.8	42	3	11.4	.17	.02	.01	.01
MAR												
14...	1025	1570	46	7.0	6.5	13	3	12.4	.33	.06	.01	.00
29...	1045	1980	42	7.0	5.1	13	3	14.0	.25	.02	.01	.00
APR												
11...	1015	2550	35	7.1	8.1	17	1	12.3	.16	.03	.01	.01
25...	1045	6250	33	6.6	7.5	25	9	12.1	.12	.18	.04	.00
MAY												
09...	1200	2550	45	6.7	9.5	17	2	11.6	.12	.01	.01	.00
23...	1030	2760	35	7.0	9.3	13	1	11.5	.12	.08	.01	.00
JUN												
13...	1045	2480	30	7.1	12.0	13	2	10.7	.07	.03	.01	.00
27...	1030	1400	37	6.5	14.2	25	1	9.9	.10	.04	.01	.01
JUL												
05...	1025	1190	45	6.7	12.3	13	1	10.6	.09	.04	.01	.01
18...	1015	1070	41	7.0	12.5	13	1	9.4	.11	.05	.02	.01
AUG												
01...	0950	566	60	6.6	17.3	17	4	8.7	.12	.03	.01	.00
15...	0950	495	61	7.0	17.0	21	1	8.2	.12	.03	.01	--
SEP												
06...	1010	1650	42	7.1	12.5	17	3	11.1	.16	.10	.03	.01
19...	1030	980	55	7.0	12.0	13	3	9.5	.12	.03	.01	.00

12144500 SNOQUALMIE RIVER NEAR SNOQUALMIE, WA

LOCATION.--Lat 47°32'43", long 121°50'28", in SW¼SW¼ sec.19, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank 0.3 mi (0.5 km) downstream from Snoqualmie Falls, 0.4 mi (0.6 km) upstream from Tokul Creek, 1.5 mi (2.4 km) northwest of Snoqualmie, and at mile 40.0 (64.4 km).

DRAINAGE AREA.--375 mi^2 (971 km^2).

PERIOD OF RECORD.--May 1898 to July 1899; August to September 1899 (monthly discharge only); January to July 1900, September 1902 to July 1904; August to September 1904 (monthly discharge only); October 1904 to September 1905 and November to December 1906 (gage heights only); August 1907 to May 1926 (monthly discharge only); June 1926 to September 1927; October 1927 to September 1932 (monthly discharge only); August 1958 to current year. Published as "near Snoqualmie Falls" 1904-06.

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (36.6 m), from river-profile map. Prior to Nov. 3, 1902, and Nov. 1, to Dec. 31, 1906, nonrecording gages above and below Snoqualmie Falls at different datum. Nov. 3, 1902, to Sept. 30, 1905, nonrecording gage at site 4 mi (6.4 km) upstream and 300 ft (91 m) downstream from South Fork, at different datum.

REMARKS.--Records good. Medium and low flows affected by powerplant 0.1 mi (0.2 km) above station. No regulation.

AVERAGE DISCHARGE.--47 years (water years, 1899, 1903-04, 1908-32, 1959-77), 2,608 ft^3/s (73.9 m^3/s), 1,899,000 acre-ft/yr (2,340 hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,000 ft^3/s (1,730 m^3/s) Nov. 23, 1959, gage height, 19.78 ft (6.029 m); minimum, 9.7 ft^3/s (0.27 m^3/s) Aug. 14, 27, 1958, gage height, -0.53 ft (-0.162 m); minimum daily, 88 ft^3/s (2.49 m^3/s) Aug. 8, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,800 ft^3/s (504 m^3/s) Jan. 18, gage height, 12.78 ft (3.895 m); minimum, 267 ft^3/s (7.561 m^3/s) Oct. 19, gage height, 2.19 ft (0.668 m); minimum daily, 453 ft^3/s (12.8 m^3/s) Aug. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	659	4620	1310	1800	1140	2100	1920	3700	4460	982	607	1210
2	656	2450	1220	1600	1080	1790	1750	4120	3760	1030	588	1100
3	946	1770	1140	1470	1010	1860	1540	4830	3030	1150	582	1480
4	803	1460	1060	1340	951	1570	1680	3960	4490	1070	577	2330
5	720	1260	997	1220	911	1460	2090	3100	4390	1090	577	2570
6	681	1120	987	1130	891	1440	3380	2560	4780	1040	602	1660
7	646	997	3840	1080	856	1800	4740	2320	4680	981	550	1280
8	616	944	4250	1000	835	2710	5340	2420	4090	921	547	1370
9	604	924	3350	942	836	2950	3760	2510	2930	874	538	1150
10	638	897	2420	906	1250	2340	2810	2840	2550	855	520	1010
11	847	839	2100	935	2500	1890	2580	3220	2510	748	518	910
12	792	792	1890	1300	3860	1810	2350	2520	2380	985	510	878
13	710	754	1840	1430	4480	1730	2530	2250	2370	1000	504	823
14	655	728	1860	1370	2520	1560	2430	2400	2320	863	496	758
15	624	855	2080	1780	1940	1470	2220	2330	2160	831	495	655
16	605	3510	2810	3460	1700	1410	2760	2170	1950	817	478	684
17	584	4720	2140	9210	1750	1290	2430	2070	1930	974	459	668
18	566	4180	2420	13200	2520	1270	2150	2190	2050	1070	453	638
19	546	2460	1970	7540	2020	1390	1860	2080	2050	891	462	763
20	527	1970	1660	4150	1710	1380	1690	2000	1880	814	455	892
21	522	1630	1510	3020	1700	1450	1630	2780	1680	768	455	3050
22	515	1560	1440	2450	1670	1740	1960	2750	1800	748	480	2030
23	507	1340	2280	2070	1660	2150	3330	2780	1670	737	553	1630
24	523	1290	1930	1800	1470	1990	5060	3250	1450	715	772	2200
25	1590	5590	1860	1620	1420	1780	6210	2750	1400	713	1360	2400
26	2970	3290	8170	1470	1430	1950	5610	2820	1340	691	1760	1890
27	1550	2230	9180	1350	1840	3300	4030	2650	1230	719	1640	1490
28	1260	1810	4500	1250	2290	2420	3600	2550	1150	650	1270	1320
29	1380	1570	3110	1170	---	2070	3810	2780	1110	701	2120	1390
30	1150	1420	2480	1110	---	1720	3490	2430	989	635	2340	1540
31	2190	---	2070	1100	---	1620	---	2690	---	642	1810	---
TOTAL	27582	58980	79874	75273	48240	57410	90740	85820	74579	26705	25078	41769
MEAN	890	1966	2577	2428	1723	1852	3025	2768	2486	861	809	1392
MAX	2970	5590	9180	13200	4480	3300	6210	4830	4780	1150	2340	3050
MIN	507	728	987	906	835	1270	1540	2000	989	635	453	638
CFSM	2.37	5.24	6.87	6.48	4.60	4.94	8.07	7.38	6.63	2.30	2.16	3.71
IN.	2.74	5.85	7.92	7.47	4.79	5.70	9.00	8.51	7.40	2.65	2.49	4.14
AC-FT	54710	117000	158400	149300	95680	113900	180000	170200	147900	52970	49740	82850

CAL YR 1976 TOTAL 941297 MEAN 2572 MAX 18900 MIN 507 CFSM 6.86 IN 93.38 AC-FT 1867000
WTR YR 1977 TOTAL 692050 MEAN 1896 MAX 13200 MIN 453 CFSM 5.06 IN 68.65 AC-FT 1373000

12145500 RAGING RIVER NEAR FALL CITY, WA

LOCATION.--Lat 47°32'24", long 121°54'28", on west line sec.27, T.24 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank at highway bridge 2.0 mi (3.2 km) southwest of Fall City and 2.6 mi (4.2 km) upstream from mouth.

DRAINAGE AREA.--30.6 mi² (79.3 km²).

PERIOD OF RECORD.--July 1945 to September 1950, water years 1951, and 1953-63 (annual maximum). December 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 250 ft (76 m), from topographic map. Prior to Oct. 1, 1950, water-stage recorder on left bank at present site and datum. August 1951 and January 1953 to February 1963, crest-stage gage only on left bank at present site and datum.

REMARKS.--Records good except during period of missing record Dec. 15 to Jan. 27, which are fair. Some small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--16 years (water years 1946-50, 1965-72, 1975-77), 146 ft³/s (4.135 m³/s) 64.79 in/yr (1,646 mm/yr), 105,800 acre-ft/yr (130 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,420 ft³/s (96.9 m³/s) Feb. 9, 1951, gage height, 6.75 ft (2.060 m), from high-water mark in well, from rating curve extended above 1,700 ft³/s (48.1 m³/s) on basis of contracted- opening measurement of peak flow; minimum daily discharge, 4.4 ft³/s (0.12 m³/s) Aug. 21, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s (36.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 25	0900	*764	21.6	*3.49	1.064

Minimum discharge, 10 ft³/s (0.28 m³/s) Aug. 18, 19, gage height, 0.58 ft (0.177 ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	164	68	115	62	142	120	44	213	21	13	41
2	32	100	60	105	55	144	101	59	167	24	13	33
3	64	73	56	100	49	295	90	87	134	23	13	43
4	36	59	51	96	47	207	82	87	105	25	13	75
5	32	52	47	90	44	157	78	89	142	26	13	58
6	29	45	46	84	41	140	75	78	112	25	12	41
7	28	41	210	80	39	159	73	68	89	22	12	35
8	26	38	162	76	37	238	93	62	74	20	12	39
9	25	37	128	72	36	266	90	56	66	19	12	32
10	28	35	103	72	53	193	78	71	58	19	12	29
11	29	33	89	80	58	157	78	111	51	20	12	27
12	28	31	77	142	73	249	71	76	47	23	12	25
13	26	30	82	146	72	193	92	65	44	22	11	24
14	25	29	75	135	58	166	85	62	41	20	11	23
15	24	36	72	130	51	155	87	58	40	18	12	22
16	24	55	69	170	51	137	162	77	37	18	11	21
17	23	92	80	210	49	116	132	80	35	19	11	21
18	22	91	83	390	49	106	110	76	33	19	11	20
19	22	76	74	350	45	104	94	65	32	17	11	25
20	21	70	70	280	44	99	83	57	31	17	12	41
21	20	60	68	220	47	125	75	69	31	16	12	159
22	20	55	73	150	46	124	71	59	31	15	12	80
23	20	51	280	110	41	174	64	74	29	15	17	94
24	22	73	200	90	39	164	59	135	27	15	67	175
25	38	441	165	76	55	153	57	101	25	14	61	149
26	70	247	360	70	59	210	78	126	24	15	97	110
27	38	153	320	65	78	290	61	110	24	15	58	81
28	59	115	230	59	125	203	54	151	23	14	48	66
29	62	92	170	55	---	160	50	158	23	14	48	62
30	45	80	145	52	---	132	47	120	22	14	125	58
31	112	---	130	57	---	126	---	170	---	13	64	---
TOTAL	1074	2554	3843	3927	1503	5284	2490	2701	1892	577	828	1709
MEAN	34.6	85.1	124	127	53.7	170	83.0	87.1	63.1	18.6	26.7	57.0
MAX	112	441	360	390	125	295	162	170	213	26	125	175
MIN	20	29	46	52	36	99	47	44	22	13	11	20
CFSM	1.13	2.78	4.05	4.15	1.76	5.56	2.71	2.85	2.06	.61	.87	1.86
IN.	1.31	3.10	4.67	4.77	1.83	6.42	3.03	3.28	2.30	.70	1.01	2.08
AC-FT	2130	5070	7620	7790	2980	10480	4940	5360	3750	1140	1640	3390

CAL YR 1976 TOTAL 41746 MEAN 114 MAX 1560 MIN 20 CFSM 3.73 IN 50.75 AC-FT 82800

WTR YR 1977 TOTAL 28382 MEAN 77.8 MAX 441 MIN 11 CFSM 2.54 IN 34.50 AC-FT 56300

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°42'45", long 121°47'15", in SW¼NE¼ sec.28, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi (4.7 km) upstream from confluence with South Fork, 7.4 mi (11.9 km) northeast of Carnation, and at mile 11.7 (18.8 km).

DRAINAGE AREA.--39.9 mi² (103.3 km²).

PERIOD OF RECORD.--October 1952 to December 1963, November 1967 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from river-profile map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--20 years (water years, 1953-63, 1969-77), 374 ft³/s (10.59 m³/s) 127.29 in/yr (3,233 mm/yr) 271,000 acre-ft/yr (334 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,560 ft³/s (271 m³/s) Dec. 15, 1959, gage height, 13.15 ft (4.008 m), from rating curve extended above 2,800 ft³/s (79.3 m³/s); minimum, 38 ft³/s (1.08 m³/s) Sept. 13, 14, 1958, but may have been less sometime during period of no gage-height record in October 1952; minimum gage height, 3.37 ft (1.027 m) Oct. 25, 26, 27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*) from high-water mark in well:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*2,790	79.0	*8.72	2.658

Minimum discharge, 57 ft³/s (1.61 m³/s) Aug. 20, 21, 22, 23, gage height, 3.51 ft (1.069 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	439	162	215	220	291	267	402	570	121	84	187
2	98	211	154	202	190	237	246	622	386	160	82	162
3	130	162	146	190	174	249	232	634	321	158	80	287
4	98	141	141	180	166	217	258	502	574	166	79	411
5	90	127	136	170	160	205	394	390	442	264	78	266
6	84	118	154	166	154	210	574	321	438	180	76	186
7	82	110	690	160	150	335	700	310	390	148	74	165
8	79	106	478	154	146	394	642	374	321	134	73	196
9	78	102	324	148	146	382	438	352	261	128	71	158
10	128	98	264	145	276	258	331	438	246	125	69	143
11	146	94	270	150	213	232	324	534	240	141	68	133
12	121	91	246	317	438	246	288	349	225	200	66	125
13	100	88	246	252	352	222	442	307	217	172	65	119
14	90	86	222	249	225	205	352	331	212	141	64	115
15	86	176	331	538	190	200	359	297	200	128	63	111
16	82	884	270	900	190	192	482	282	190	121	62	108
17	79	895	297	1600	232	182	352	276	192	192	60	105
18	76	450	321	1900	324	186	307	363	190	160	59	102
19	76	272	225	690	232	195	273	282	180	134	58	130
20	73	219	197	438	197	190	249	270	168	123	58	185
21	71	199	184	345	192	261	258	430	176	116	57	340
22	69	201	176	294	200	331	356	317	190	111	57	194
23	68	175	237	261	188	442	542	338	164	106	69	190
24	70	335	192	240	176	307	675	508	152	103	145	274
25	363	1040	438	222	172	258	655	366	152	101	374	239
26	297	328	1460	210	188	370	646	422	143	98	255	182
27	157	235	850	200	442	386	430	342	136	95	258	156
28	143	202	414	188	406	282	414	402	130	93	261	150
29	153	184	307	182	---	249	414	359	127	92	760	212
30	129	172	261	176	---	237	382	297	123	89	530	224
31	355	---	232	190	---	249	---	386	---	86	262	---
TOTAL	3752	7940	10025	11272	6379	8200	12282	11801	7456	4186	4417	5555
MEAN	121	265	323	364	228	265	409	381	249	135	142	185
MAX	363	1040	1460	1900	442	442	700	634	574	264	760	411
MIN	68	86	136	145	146	182	232	270	123	86	57	102
CFSM	3.03	6.64	8.10	9.12	5.71	6.64	10.3	9.55	6.24	3.38	3.56	4.64
IN.	3.50	7.40	9.35	10.51	5.95	7.64	11.45	11.00	6.95	3.90	4.12	5.18
AC-FT	7440	15750	19880	22360	12650	16260	24360	23410	14790	8300	8760	11020

CAL YR 1976 TOTAL 121703 MEAN 333 MAX 3810 MIN 68 CFSM 8.35 IN 113.47 AC-FT 241400
WTR YR 1977 TOTAL 93265 MEAN 256 MAX 1900 MIN 57 CFSM 6.42 IN 86.95 AC-FT 185000

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA

LOCATION.--Lat 47°42'25", long 121°35'56", in NE¼SW¼ sec.25, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi (1.0 km) upstream from Phelps Creek, 8.1 mi (13.0 km) south of Index, and mile 12.9 (20.8 km).

DRAINAGE AREA.--5.34 mi² (13.83 km²).

PERIOD OF RECORD.--December 1959 to December 1963, November 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,850 ft (564 m) from topographic map. Prior to Oct. 1, 1961, at datum 0.85 ft (0.259 m) higher.

REMARKS.--Records good except those for period of no gage-height record Aug. 15 to Sept. 26, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years (water years 1961-63, 1969-77), 57.8 ft³/s (1.637 m³/s) 146.99 in/yr (3,734 mm/yr), 41,880 acre-ft/yr (51.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft³/s (53.2 m³/s) Nov. 19, 1962; maximum gage height, 7.13 ft (2.173 m), present datum, Dec. 14, 1959; minimum daily discharge, 2.3 ft³/s (0.065 m³/s) Aug. 28-30, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 550 ft³/s (15.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0145	*565	16.0	*4.04	1.231

Minimum discharge, 2.3 ft³/s (0.065 m³/s) Aug. 22, gage height, 0.29 ft (0.088 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	106	16	18	16	36	26	87	105	11	5.5	26
2	11	42	14	15	13	26	23	142	72	20	5.2	22
3	16	28	13	14	11	24	22	128	56	21	5.0	38
4	10	22	12	13	10	19	34	79	120	23	4.8	54
5	8.2	18	11	12	9.7	19	71	57	93	31	4.6	40
6	7.4	15	15	11	9.0	22	112	45	103	28	4.2	26
7	6.7	13	117	10	8.7	55	147	44	88	20	4.0	22
8	6.2	12	126	9.5	8.2	61	123	55	65	16	3.7	27
9	5.9	11	69	9.0	10	42	74	58	45	15	3.6	20
10	17	10	44	8.5	63	25	49	76	40	14	3.4	18
11	23	9.3	41	10	56	21	52	71	40	20	3.3	16
12	16	8.4	35	29	159	22	44	48	37	28	3.3	14
13	12	7.7	35	21	88	18	70	43	37	23	3.1	12
14	9.7	7.6	30	20	40	16	48	63	35	17	3.0	10
15	8.4	30	78	72	28	14	49	50	31	15	2.9	9.5
16	7.7	193	56	182	30	13	61	43	29	13	2.8	8.8
17	6.9	177	58	330	48	12	43	44	31	33	2.7	8.2
18	6.4	84	60	397	61	12	35	68	33	23	2.6	8.0
19	5.7	46	35	109	37	12	28	48	28	16	2.5	10
20	5.5	33	27	53	31	12	25	46	24	13	2.5	20
21	5.3	30	24	37	29	33	26	112	29	12	2.4	47
22	5.1	30	21	28	35	44	53	68	36	11	2.4	26
23	4.9	24	27	23	27	65	116	69	24	9.7	3.5	24
24	5.9	77	20	19	22	40	166	85	20	8.9	14	37
25	110	166	98	17	20	25	157	61	21	8.3	50	30
26	62	54	348	15	19	50	141	70	18	7.9	35	26
27	30	33	168	13	57	60	85	57	15	7.3	35	22
28	27	25	63	12	60	30	78	62	14	7.1	35	19
29	28	21	40	11	---	23	83	56	13	6.9	110	24
30	22	18	29	11	---	22	78	44	11	6.3	70	30
31	109	---	23	14	---	24	---	72	---	5.8	45	---
TOTAL	605.1	1351.0	1751	1543.0	1005.6	897	2119	2051	1313	491.2	475.0	694.5
MEAN	19.5	45.0	56.5	49.8	35.9	28.9	70.6	66.2	43.8	15.8	15.3	23.2
MAX	110	193	348	397	159	65	166	142	120	33	110	54
MIN	4.9	7.6	11	8.5	8.2	12	22	43	11	5.8	2.4	8.0
CFSM	3.65	8.43	10.6	9.33	6.72	5.41	13.2	12.4	8.20	2.96	2.87	4.35
IN.	4.21	9.41	12.20	10.75	7.00	6.25	14.76	14.28	9.14	3.42	3.31	4.84
AC-FT	1200	2680	3470	3060	1990	1780	4200	4070	2600	974	942	1380

CAL YR 1976 TOTAL 17800.5 MEAN 48.6 MAX 374 MIN 4.9 CFSM 9.10 IN 124.00 AC-FT 35310
WTR YR 1977 TOTAL 14296.4 MEAN 39.2 MAX 397 MIN 2.4 CFSM 7.34 IN 99.57 AC-FT 28360

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'22", long 121°42'44", in SW¼SW¼ sec.31, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.1 mi (0.2 km) upstream from private road bridge, 9.8 mi (15.8 km) northeast of Carnation, and at mile 6.8 (10.9 km).

DRAINAGE AREA.--19.7 mi² (51.0 km²).

PERIOD OF RECORD.--October 1952 to December 1963, June 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft (396 m), from river-profile map.

REMARKS.--Records good. Regulation by South Fork Tolt Reservoir, capacity, 57,830 acre-ft (71.3 hm³) since Sept. 1963. During 1977 water year the Seattle Water Department diverted an average daily discharge of about 81 ft³/s (2.29 m³/s) above the station.

AVERAGE DISCHARGE.--11 years (water years 1953-63), 198 ft³/s s(5.607 m³/s), 143,300 acre-ft/yr (177 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft³/s (184 m³/s) Dec. 15, 1959, gage height, 7.45 ft (2.271 m), from rating curve extended above 2,700 ft³/s (76.5 m³/s); maximum gage height, 7.62 ft (2.323 m) Nov. 20, 1958, backwater from debris; minimum discharge, 8.4 ft³/s (0.24 m³/s) Sept. 12, 1963, minimum gage height, 0.81 ft (0.247 m) Aug. 25-27, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 515 ft³/s (14.6 m³/s) Nov. 3, gage height, 3.55 ft (1.082 m), caused by regulation; minimum, 21 ft³/s (0.595 m³/s) Sept. 1, 2, gage height, 1.56 ft (0.475 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	60	56	47	54	36	36	73	142	33	31	21
2	54	57	55	47	53	37	34	100	136	34	30	25
3	54	68	55	60	43	37	36	162	106	33	30	30
4	97	54	55	47	37	35	37	150	130	35	30	33
5	136	54	55	47	36	34	37	113	138	34	32	27
6	132	53	52	46	36	35	39	77	126	33	33	26
7	138	53	52	46	36	38	41	47	115	33	33	30
8	138	52	43	46	35	43	39	39	92	33	32	30
9	138	52	47	46	32	37	33	37	63	33	32	30
10	138	52	47	45	30	33	35	48	43	33	31	30
11	142	52	47	46	28	32	40	97	35	33	31	30
12	142	52	46	50	32	34	36	80	34	33	31	30
13	142	52	47	44	30	33	40	57	33	33	31	30
14	120	52	46	47	30	33	37	58	33	33	30	30
15	96	53	47	54	32	34	39	59	33	34	30	30
16	94	57	46	62	32	33	42	54	33	34	30	30
17	96	59	48	69	33	34	38	43	33	35	30	30
18	94	55	47	76	33	35	37	42	33	34	30	30
19	92	54	46	63	31	36	36	38	33	34	30	33
20	92	53	46	59	32	36	35	35	33	33	30	37
21	92	54	46	58	32	37	35	52	33	33	30	43
22	92	53	47	57	32	37	38	69	33	33	29	37
23	91	53	52	56	33	38	46	77	33	33	29	40
24	91	56	47	55	32	36	111	126	33	33	27	41
25	100	65	57	55	33	34	177	120	33	33	30	39
26	73	57	65	55	33	43	229	118	33	33	27	38
27	56	56	55	54	39	39	175	107	34	33	25	38
28	58	56	50	54	37	37	126	122	33	33	25	39
29	57	56	50	54	---	36	104	124	33	33	26	42
30	56	56	49	53	---	35	86	106	33	33	28	46
31	63	---	48	53	---	36	---	109	---	33	23	---
TOTAL	3018	1656	1549	1651	976	1113	1874	2539	1755	1033	916	995
MEAN	97.4	55.2	50.0	53.3	34.9	35.9	62.5	81.9	58.5	33.3	29.5	33.2
MAX	142	68	65	76	54	43	229	162	142	35	33	46
MIN	54	52	43	44	28	32	33	35	33	33	23	21
AC-FT	5990	3280	3070	3270	1940	2210	3720	5040	3480	2050	1820	1970

CAL YR 1976 TOTAL 29911 MEAN 81.7 MAX 660 MIN 24 AC-FT 59330
WTR YR 1977 TOTAL 19075 MEAN 52.3 MAX 229 MIN 21 AC-FT 37840

12148500 TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'45", long 121°49'22", in SE¼NE¼ sec.31, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 500 ft (152 m) downstream from the forks, 0.4 mi (0.6 km) upstream from Stossel Creek, 5.5 mi (8.8 km) northeast of Carnation, and at mile 8.7 (14.0 km).

DRAINAGE AREA.--81.4 mi² (210.8 km²).

PERIOD OF RECORD.--August 1928 to January 1932, September 1937 to current year. Prior to October 1951, published as "near Tolt." Chemical analyses July 1960 to September 1970.

REVISED RECORDS.--WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1948(M), 1951(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 348 ft (106.1 m) above mean sea level (river-profile survey). Prior to Oct. 31, 1928, nonrecording gage and Oct. 31, 1928, to Jan. 3, 1932, water-stage recorder, at site 350 ft (107 m) upstream at datum 7.1 ft (2.16 m) higher (river-profile survey). Sept. 1 to Oct. 6, 1937, nonrecording gage at present site at datum 1.64 ft (0.500 m) higher.

REMARKS.--Records good. Some regulation by South Fork Reservoir, capacity, 57,850 acre-ft (71.3 hm³). During the current water year city of Seattle Water Department diverted an average daily discharge of about 80 ft³/s (2.27 m³/s) above station for municipal use.

AVERAGE DISCHARGE.--43 years (water years, 1929-31, 1938-77), 605 ft³/s (17.13 m³/s), 438,300 acre-ft/yr (540 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft³/s (493 m³/s) Dec. 15, 1959, gage height, 13.04 ft (3.975 m), from rating curve extended above 7,600 ft³/s (215 m³/s) on basis of slope-area measurement at gage height, 12.92 ft (3.938 m); minimum, 53 ft³/s (1.50 m³/s) Sept. 22, 23, 1951, gage height, 3.84 ft (1.170 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,400 ft³/s (96.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*3,020	85.5	*8.25	2.515

Minimum discharge, 102 ft³/s (2.89 m³/s) Aug. 22, 23, gage height, 4.16 ft (1.268 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	162	572	284	366	327	436	407	573	819	180	136	254
2	170	317	269	326	300	374	375	744	632	218	132	217
3	207	275	257	331	263	431	351	918	534	231	130	351
4	209	228	267	291	242	375	371	777	742	229	128	483
5	259	212	238	275	235	340	496	645	672	336	126	330
6	249	203	253	273	229	331	674	537	667	252	126	262
7	256	194	871	269	223	451	793	484	586	211	123	225
8	252	189	670	252	217	544	772	542	495	195	120	256
9	250	185	533	241	214	567	566	499	401	187	118	212
10	294	180	433	233	336	410	449	561	358	183	115	196
11	326	176	428	262	352	363	436	762	333	195	113	183
12	295	172	394	476	490	356	388	592	313	261	113	175
13	272	169	383	420	434	361	582	502	304	241	111	171
14	241	167	355	445	296	332	499	494	301	202	110	166
15	200	263	448	714	261	326	503	451	311	189	110	160
16	196	956	407	1110	257	315	648	426	277	181	108	162
17	192	1020	412	1850	297	300	529	402	267	256	107	154
18	189	620	483	2190	400	297	486	409	266	225	105	149
19	185	402	356	971	305	319	422	398	252	192	105	161
20	182	337	320	672	266	308	371	387	235	180	105	246
21	181	306	303	551	262	373	373	553	241	173	105	421
22	180	313	294	471	270	449	473	456	257	168	104	261
23	178	270	458	420	267	591	659	493	229	164	117	260
24	180	346	398	379	247	455	846	725	216	158	198	354
25	455	1300	909	363	251	389	922	608	215	154	439	316
26	442	527	1560	344	248	445	981	638	203	152	335	257
27	240	399	1130	314	521	574	721	563	197	149	318	224
28	230	350	634	301	535	455	646	619	191	147	315	217
29	228	322	499	290	---	407	620	594	186	145	817	292
30	211	301	424	278	---	377	569	502	182	142	617	321
31	432	---	379	293	---	385	---	580	---	139	333	---
TOTAL	7553	11285	14708	15931	8545	12524	16928	17543	10900	6035	6039	7634
MEAN	244	376	474	514	305	404	564	566	363	195	195	254
MAX	455	1300	1560	2190	535	591	981	918	819	336	817	483
MIN	162	167	238	233	214	297	351	387	182	139	104	149
AC-FT	14980	22380	29170	31600	16950	24840	33580	34800	21620	11970	11980	15140

CAL YR 1976 TOTAL 180477 MEAN 493 MAX 5170 MIN 150 AC-FT 358000
WTR YR 1977 TOTAL 135429 MEAN 371 MAX 2190 MIN 104 AC-FT 268600

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°39'58", long 121°55'27", in NW¼SW¼ sec.9, T.25 N., R.7 E., King County, Hydrologic Unit 17110010, on left bank 40 ft (12 m) downstream from highway bridge, 1.3 mi (2.1 km) northwest of Carnation, 1.9 mi (3.1 km) downstream from Tolt River, and at mile 23.0 (37.0 km).

DRAINAGE AREA.--603 mi^2 (1,562 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1316: 1932-35(M). WSP 1446: 1934(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level, unadjusted. Prior to Dec. 20, 1933, nonrecording gage on old bridge, 100 ft (30 m) upstream and Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site, at datum 42.96 ft (13.094 m) higher.

REMARKS.--Water-discharge reords good. During 1977 city of Seattle Water Department diverted an average daily discharge of 80 ft^3/s (2.27 m^3/s) above station for municipal use. Several small diversions for irrigation and domestic use above. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to river above station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant.

AVERAGE DISCHARGE.--49 years, 3,814 ft^3/s (108.0 m^3/s), 85.89 in/yr (2,182 mm/yr), 2,763,000 acre-ft/yr (3,410 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft^3/s (1,690 m^3/s) Feb. 27, 1932, elevation, 59.88 ft (18.251 m), from graph based on gage readings; maximum elevation observed, 59.93 ft (18.267 m) Nov. 13, 1932; minimum discharge, 239 ft^3/s (6.77 m^3/s) Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum daily discharge, 396 ft^3/s (11.2 m^3/s) Sept. 24, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft^3/s (453 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1100	*18,400	521	*52.35	15.956

Minimum discharge, 590 ft^3/s (16.7 m^3/s) Aug. 18, 19, 21, 22, 23, elevation, 44.18 ft (13.466 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	838	6070	1660	2420	1710	3110	2040	4630	5910	1310	813	1750
2	812	3400	1540	2100	1690	2590	2490	5070	5300	1400	794	1450
3	1160	2260	1460	1930	1530	3060	2230	6480	4230	1510	785	1700
4	1070	1790	1370	1770	1440	2620	2280	5530	5550	1510	776	2390
5	1030	1550	1300	1620	1380	2340	2670	4410	5980	1610	781	3490
6	950	1400	1260	1510	1340	2140	4160	3610	6000	1470	703	2220
7	925	1260	6280	1450	1300	2920	5790	3110	5980	1390	746	1700
8	862	1160	5450	1350	1260	3900	6940	3180	5340	1290	764	1720
9	859	1160	4710	1270	1250	4540	5200	3320	3990	1240	693	1570
10	891	1120	3250	1220	1460	3610	2930	3540	3340	1200	680	1400
11	1160	1050	2700	1240	3130	2890	3420	4630	3170	1170	685	1280
12	1140	947	2430	1760	3730	2910	3200	3620	2960	1370	667	1200
13	1020	943	2260	2140	6060	2740	3370	3150	2930	1400	660	1150
14	940	902	2340	2040	3390	2440	3610	3050	2810	1260	657	1070
15	851	1050	2310	2570	2470	2290	3110	3100	2730	1170	647	990
16	799	3530	3600	4890	2130	2190	4040	2880	2430	1150	635	934
17	773	5840	2730	11900	2110	2010	3680	2670	2320	1240	615	938
18	748	6030	3100	15600	3030	1920	3230	2860	2430	1490	596	904
19	736	3260	2560	12100	2610	2010	2770	2680	2430	1260	599	991
20	712	2510	2080	6100	2160	2040	2400	2530	2310	1130	600	1160
21	705	1980	1880	4670	2110	2100	2290	3250	2040	1090	594	3350
22	695	1890	1740	3730	2050	2440	2530	3710	2100	1030	609	2760
23	685	1670	2910	3080	2100	3100	3970	3440	2110	1010	647	2050
24	705	1590	2940	2640	1910	3060	5950	4500	1840	977	1130	2570
25	1100	7020	2480	2350	1820	2590	7810	3930	1720	960	1040	3140
26	4020	4870	9220	2140	1880	2610	7490	3830	1740	936	2290	2510
27	1990	3110	12600	1960	2320	4670	5620	3730	1600	945	2130	1970
28	1540	2300	6660	1820	3150	3860	4750	3540	1490	915	1720	1740
29	1670	2010	4530	1720	---	3080	4880	3930	1470	933	2790	1790
30	1400	1800	3540	1640	---	2500	4540	3400	1370	882	3230	2030
31	1700	---	2080	1630	---	2400	---	3560	---	837	2610	---
TOTAL	34575	75622	103860	104440	62480	86080	120990	114870	95620	37085	33376	53997
MEAN	1115	2521	3350	3369	2231	2777	4033	3705	3187	1196	1077	1800
MAX	4020	7020	12600	15600	6060	4670	7810	6480	6000	1610	3230	3490
MIN	685	902	1260	1220	1250	1920	2230	2530	1370	837	594	904
CFSM	1.85	4.18	5.56	5.59	3.70	4.61	6.69	6.14	5.29	1.98	1.79	2.99
IN.	2.13	4.67	6.41	6.44	3.85	5.31	7.46	7.09	5.90	2.29	2.06	3.33
AC-FT	68580	150000	206000	207200	123900	170700	240000	227800	189700	73560	66200	107100

CAL YR 1976 TOTAL 1271870 MEAN 3475 MAX 28900 MIN 685 CFSM 5.76 IN 78.46 AC-FT 2523000
WTR YR 1977 TOTAL 922995 MEAN 2529 MAX 15600 MIN 594 CFSM 4.19 IN 56.94 AC-FT 1831000

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At highway bridge 40 ft (12 m) upstream from gaging station.

PERIOD OF RECORD.--Water years 1965-71, 1973-74, October 1976 to September 1977.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to June 1969.
WATER TEMPERATURES: October 1966 to June 1969.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data for the bimonthly water-quality samples listed below furnished by Washington State Department of Ecology. Coliform analyses for the diel study were performed by the Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
11...	1030	1200	60	7.3	12.7	17	5	10.4	.11	.03	.02	.00
25...	1050	740	66	7.4	9.1	17	1	10.9	.09	.02	.01	.00
NOV												
08...	1135	1180	50	7.2	9.1	21	2	10.9	.18	.03	.01	.00
16...	1045	1310	60	7.1	9.1	29	25	11.4	.70	.04	.01	.00
DEC												
06...	1135	1230	56	7.3	9.2	17	2	13.0	.27	.06	.01	.00
20...	1110	2890	45	7.1	4.0	21	4	12.9	.26	.04	.01	.00
JAN												
11...	1230	1190	61	7.2	2.6	13	6	12.5	.32	.05	.01	.00
24...	1140	2640	50	7.0	4.3	17	3	12.8	.34	.04	.01	.00
FEB												
01...	1155	1700	60	7.3	5.0	17	3	12.5	.29	.04	.02	.00
21...	1000	2120	47	6.9	6.6	46	2	11.3	.22	.02	.01	.00
MAR												
14...	1105	2440	53	7.2	5.5	21	5	12.4	.44	.05	.02	.00
29...	1140	3160	47	7.2	5.8	22	4	13.3	.33	.04	.02	.00
APR												
11...	1050	3440	43	7.2	8.2	17	4	12.1	.20	.04	.01	.00
25...	1125	6240	33	6.6	8.9	33	20	11.7	.14	.04	.07	.00
MAY												
09...	1240	3350	41	6.7	11.0	25	2	11.2	.14	.02	.01	.00
23...	1115	3400	36	6.5	11.0	13	2	10.8	.12	.03	.01	.00
JUN												
13...	1130	3010	37	7.2	13.1	17	2	10.2	.09	.03	.01	.00
27...	1105	1470	46	7.0	15.7	21	3	10.0	.12	.06	.01	.00
JUL												
05...	1115	1600	52	7.1	13.0	21	2	10.6	.12	.05	.01	.01
18...	1110	1930	52	7.2	14.3	13	2	9.8	.12	.05	.01	.01
AUG												
01...	1025	831	65	7.4	19.0	21	2	9.4	.11	.03	.01	.00
09...	1145	721	55	7.3	20.2	--	1	9.4	.09	.04	.01	.00
15...	1030	650	71	7.2	19.1	17	1	8.5	.13	.11	.02	.00
SEP												
06...	1045	2200	39	7.2	14.3	29	4	11.0	.10	.08	.02	.00
19...	1115	908	60	7.3	12.7	21	2	10.2	.12	.02	.01	.00

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./ 100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
09...	1145	721	55	7.3	20.2	1	9.4	103	B67	B25	23
09...	1415	732	56	7.5	21.6	--	9.4	106	--	--	--
09...	1720	743	56	7.5	22.2	1	9.2	105	B44	B16	--
09...	2045	721	57	7.1	21.0	--	8.6	97	--	--	--
09...	2320	690	57	7.2	21.0	1	8.2	91	B90	40	--
10...	0120	680	57	7.2	20.2	--	8.3	90	--	--	--
10...	0325	680	59	7.3	19.7	1	8.5	92	B100	B23	--
10...	0530	670	59	7.2	18.8	--	8.4	89	--	--	--
10...	0720	670	60	7.2	19.0	--	8.6	92	--	--	--
10...	0940	670	60	7.3	19.6	--	9.2	100	--	--	--

B Results based upon colony counts outside the ideal range.

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
AUG										
09...	0	6.4	1.5	1.8	.5	31	0	25	2.5	3.5
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	31	0	25	1.0	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SUS-PENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
AUG										
09...	1.4	.0	9.2	34	0	.09	.04	.12	.01	.00
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	0	.09	.04	.08	.02	.00
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

12150700 SNOQUALMIE RIVER NEAR MONROE, WA

LOCATION.--Lat 47°48'14", long 122°00'06", in NE¼NW¼ sec.26, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110010, at High bridge, 2.9 (4.7 km) upstream from Skykomish River and 3.3 mi (5.3 km) south of Monroe.

PERIOD OF RECORD.--October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER-QUALITY DATA OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
11...	1100	1040	64	7.3	13.5	25	6	9.8	.11	.05	.02	.00
25...	1130	760	72	7.4	8.9	25	1	10.9	.10	.04	.02	.00
NOV												
08...	1210	1320	55	7.2	9.1	25	2	10.6	.20	.06	.02	.00
16...	1120	1340	65	7.3	9.6	95	60	11.4	.23	.07	.02	.00
DEC												
08...	1205	1360	58	7.2	5.0	25	3	12.9	.28	.08	.02	.00
20...	1140	2250	46	7.0	4.8	29	4	12.7	.30	.07	.02	.00
JAN												
11...	1300	1350	70	7.0	2.3	17	4	13.1	.37	.09	.02	.00
24...	1210	3100	53	7.1	5.0	21	4	12.6	.50	.06	.02	.01
FEB												
01...	1225	2600	75	7.2	4.3	17	2	12.6	.38	.06	.02	.01
21...	1045	2300	50	6.6	7.4	46	3	10.9	.50	.04	.02	.00
MAR												
14...	1135	3200	60	7.1	6.1	25	5	11.8	.67	.11	.02	.01
29...	1220	3720	50	7.1	5.8	25	6	12.4	.46	.05	.03	.00
APR												
11...	1130	3610	40	7.1	8.1	21	5	12.0	.23	.03	.02	.01
25...	1155	6900	30	6.6	10.2	29	15	11.5	.16	.04	.06	.00
MAY												
09...	1310	3650	44	6.8	11.4	21	4	11.3	.10	.02	.02	.00
23...	1145	3540	36	6.9	10.8	21	4	10.7	.15	.03	.02	.00
JUN												
13...	1200	2990	40	7.2	14.1	29	2	9.9	.11	.08	.01	.00
27...	1130	1630	47	6.9	17.2	17	3	9.3	.13	.06	.01	.00
JUL												
05...	1150	1620	57	6.8	14.2	21	2	9.9	.14	.08	.02	.01
18...	1205	1610	59	7.3	16.3	13	2	9.0	.14	.09	.03	.01
AUG												
01...	1100	910	72	6.9	20.1	29	4	8.4	.13	.07	.02	.01
15...	1105	610	72	7.1	22.0	13	2	7.9	.11	.04	.02	.00
SEP												
06...	1120	2730	39	7.1	15.0	46	5	10.5	.20	.08	.02	.01
19...	1155	960	62	7.2	13.4	21	4	9.7	.14	.04	.01	.00

12150800 SNOHOMISH RIVER NEAR MONROE, WA

LOCATION.--Lat 47°49'52", long 122°02'50", in NE¼NW¼ sec.16, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on left bank 150 ft (46 m) upstream from State Highway 522 bridge, 0.1 mi (0.2 km) downstream from confluence of Snoqualmie and Skykomish Rivers, 3.6 mi (5.8 km) southwest of Monroe, and 6 mi (9.7 km) south of Snohomish.

DRAINAGE AREA.--1,537 mi^2 (3,981 km^2).

PERIOD OF RECORD.--February 1963 to current year. Water years 1932, 1934, 1951, 1960, 1962-63 (annual maximum stage only) published in WSP 1932. Approximate annual maximum stages for water years 1921, 1949-50, 1952-59, and 1961 are on file in district office. Sediment records December 1974 to January 1976.

GAGE.--Water-stage recorder. Datum of gage is 13.25 ft (4.039 m) above mean sea level. Prior to February 1963 crest-stage gage only at site about 800 ft (244 m) downstream and Feb. 8, 1963, to May 27, 1964, water-stage recorder at site 100 ft (30 m) upstream both at mean sea level.

REMARKS.--Records good. Some regulation by powerplant above station at Snoqualmie Falls, 40 mi (64 km) upstream and by Spada Lake, 30 mi (48 km) upstream. Minor diversions for irrigation returned to river above gage. During 1977 water year city of Seattle Water Department diverted an average daily discharge of about 80 ft^3/s (2.27 m^3/s) above station for municipal use and the city of Everett diverted an average daily discharge of 127 ft^3/s (3.60 m^3/s) above the station for municipal use.

AVERAGE DISCHARGE.--14 years, 10,150 ft^3/s (287.4 m^3/s), 89.68 in/yr (2,278 mm/yr), 7,354,000 acre-ft/yr (9,070 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum stage, 35.8 ft (10.91 m) Feb. 10, 1951, datum then in use (discharge not determined); maximum discharge during period February 1963 to September 1977, 115,000 ft^3/s (3,260 m^3/s) Dec. 4, 1975, gage height, 22.92 ft (6.986 m); minimum, 1,140 ft^3/s (32.3 m^3/s) Sept. 29, 1967, Sept. 17, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1921 reached a discharge of approximately 180,000 ft^3/s (5,100 m^3/s). Floods in November or December 1897 and November 1906 are believed to be higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 33,000 ft^3/s (935 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 27	0500	34,100	966	10.27	3.130	Jan. 18	2100	*58,200	1,650	*13.21	4.026

Minimum daily discharge, 1,450 ft^3/s (41.1 m^3/s) Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2600	10400	6640	6540	6700	7630	6760	12400	13500	3680	2040	5520
2	2600	7910	6170	5770	6550	6820	6460	13700	13300	3560	1960	6270
3	3000	5650	3910	5260	6230	7030	5920	17200	10800	3060	1920	5170
4	2960	6510	3700	4910	3930	6050	5600	16000	12800	3620	1890	6750
5	2710	3960	3520	4530	3730	5970	6610	12700	15300	4170	1890	8470
6	2560	3560	3400	4220	3600	5550	9460	10300	15400	3900	1920	6150
7	2470	3240	6440	4000	3520	6050	13300	8090	16500	3560	1890	6620
8	2300	3000	11000	3620	3300	8600	17000	8770	15100	3200	1620	4300
9	2320	3060	11000	3610	3240	11600	14600	8950	11500	3090	1740	4120
10	2440	2970	7050	3440	3050	10900	10600	9590	9680	3080	1700	3560
11	3140	2800	7000	3400	7300	8000	9010	11400	9460	2900	1690	3160
12	3200	2660	6560	4360	8290	8050	8300	9900	8430	3220	1640	2960
13	2840	2510	6010	5240	14100	7510	9100	8530	8340	3600	1650	2960
14	2600	2410	6000	5090	9130	6700	9900	8760	8130	3120	1620	2680
15	2420	2750	6460	5370	7120	6220	8500	8170	7000	2880	1590	2540
16	2290	5600	10200	8450	6800	6050	9310	7720	7110	2760	1560	2390
17	2210	13500	8080	21600	5690	5600	9070	7300	6930	2960	1510	2360
18	2140	15300	8960	65900	7040	5250	8080	7390	7230	3520	1490	2280
19	2070	9120	7360	39500	7100	5400	7300	7180	7240	3100	1470	2280
20	2000	6930	6050	20600	6070	5520	6660	6700	6750	2760	1460	3060
21	1950	5700	5360	13700	5860	5350	6020	8510	5910	2500	1450	6660
22	1910	5290	4960	10700	5750	5950	6220	10100	6000	2450	1510	6930
23	1870	4770	6270	8060	6070	7100	9070	9360	5970	2390	1560	5300
24	1870	4350	6910	7750	5600	7060	14600	10700	5290	2320	2360	6930
25	2450	12200	6210	7630	5270	6670	20200	9740	4920	2270	3600	7710
26	6900	12100	20900	6760	5270	6660	20100	9350	4770	2250	5320	6450
27	6900	7050	30800	5570	5500	10500	15000	9370	4350	2230	4050	5250
28	3060	6250	10500	5200	7210	9060	12000	8630	4060	2230	4000	4570
29	3900	5300	12100	5070	---	8290	12000	8720	3060	2300	12400	4470
30	3500	4060	9470	5270	---	7120	12400	8000	3640	2200	17700	5000
31	3540	---	7660	5050	---	6640	---	8120	---	2110	8600	---
TOTAL	87520	180730	261360	287220	163270	224700	311370	302190	259350	91760	92970	138640
MEAN	2823	6024	8431	9265	5831	7248	10379	9748	8645	2960	2999	4621
MAX	6900	15300	30800	65900	14100	11600	20200	17200	16500	4170	17700	8470
MIN	1870	2410	3400	3400	3240	5250	5600	6700	3060	2110	1450	2280
CFSM	1.84	3.92	5.49	6.03	3.79	4.72	6.75	6.34	5.63	1.93	1.95	3.01
IN.	2.12	4.37	6.33	6.95	3.95	5.44	7.53	7.31	6.28	2.22	2.25	3.36
AC-FT	173600	358500	518400	569700	323900	445700	617600	599400	514400	182000	184400	275000

CAL YR 1976 TOTAL 3389030 MEAN 9260 MAX 69900 MIN 1870 CFSM 6.02 IN 82.02 AC-FT 6722000
WTR YR 1977 TOTAL 2400750 MEAN 6577 MAX 65900 MIN 1450 CFSM 4.28 IN 58.11 AC-FT 4762000

12152800 PILCHUCK RIVER NEAR LAKE STEVENS, WA

LOCATION.--Lat 48°03'12", long 122°01'22", in SE¼SW¼ sec.27, T.30 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, at road bridge 0.4 mi (0.6 km) east of Lochsloy and 3.1 mi (5.0 km) northeast of Lake Stevens.

PERIOD OF RECORD.--October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
11...	1605	535	36	7.2	12.2	160	15	10.8	.15	.07	.06	.00
25...	1455	110	70	7.6	9.3	20	1	11.1	.17	.06	.03	.01
NOV												
08...	1515	100	62	7.0	10.8	20	1	11.0	.28	.03	.07	.00
15...	1610	160	65	7.6	10.0	60	6	11.1	.30	.07	.03	.00
DEC												
06...	1650	193	73	7.3	6.2	25	2	12.6	.45	.08	.02	.01
20...	1620	225	60	7.1	4.7	20	3	13.1	.56	.06	.02	.00
JAN												
11...	1700	--	67	7.3	3.2	17	1	12.8	.63	.09	.03	.01
26...	1500	230	65	7.2	4.5	21	1	13.0	.76	.06	.02	.01
FEB												
01...	1500	220	72	7.3	5.7	24	3	12.6	.52	.05	.02	.01
21...	1340	200	60	7.1	7.2	30	2	11.6	.66	.06	.02	.01
MAR												
16...	1630	265	55	7.3	6.1	25	3	12.3	.73	.06	.02	.01
29...	1550	565	60	6.9	7.3	26	3	11.9	.60	.02	.02	.01
APR												
11...	1625	205	55	7.1	10.1	66	3	11.9	.66	.03	.02	.01
25...	1530	322	30	6.6	11.1	--	3	11.0	.26	.06	.02	.01
MAY												
09...	1545	310	50	7.2	13.3	30	3	10.5	.66	.03	.02	.00
23...	1625	230	55	7.0	10.0	25	3	11.1	.37	.06	.02	.01
JUN												
13...	1520	101	50	7.3	15.2	29	1	10.2	.31	.06	.02	.00
27...	1640	80	75	7.6	17.0	30	3	10.7	.31	.07	.01	.01
JUL												
05...	1510	130	65	7.2	14.1	33	1	11.2	.20	.05	.02	.00
19...	1625	125	60	7.6	15.6	63	2	10.1	.21	.05	.02	.00
AUG												
01...	1355	82	60	7.0	20.2	33	3	9.5	.20	.07	.01	.00
15...	1625	67	63	7.0	20.6	13	1	9.6	.32	.02	.02	.00
SEP												
08...	1610	136	57	7.3	16.5	50	3	11.2	.26	.00	.02	.01
19...	1520	67	80	7.6	13.2	21	3	10.5	.25	.06	.03	.01

12155400 PILCHUCK RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, at U.S. Highway 2 bridge on east side of Snohomish, and at mile 1.9 (3.1 km).

DRAINAGE AREA.--132 mi² (342 km²).

PERIOD OF RECORD.--Water years 1971, 1974, Aug. 9 to Aug. 10, 1977.

COOPERATION.--Coliform analyses were performed by the Washington State Department of Ecology.

WATER-QUALITY DATA AUGUST 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
09...	1005	56	66	7.3	18.2	1	9.6	98	B700	70	37
09...	1315	56	66	7.6	20.7	--	9.6	106	--	--	--
09...	1550	56	62	7.7	22.9	1	9.3	107	B360	68	--
09...	1940	56	62	7.6	22.9	--	8.6	98	--	--	--
09...	2135	56	62	7.4	22.2	1	7.9	90	B700	300	--
10...	0025	56	67	7.3	19.8	--	7.8	84	--	--	--
10...	0225	56	69	7.3	19.0	1	8.3	90	B470	90	--
10...	0420	57	65	7.3	18.7	--	8.2	87	--	--	--
10...	0620	57	67	7.3	17.8	--	8.2	85	--	--	--
10...	0810	57	69	7.3	16.9	--	8.9	93	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
09...	1	6.9	3.5	2.9	.7	43	0	35	3.4	3.6
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	42	0	34	1.3	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
09...	3.7	.2	9.6	56	5	.37	.06	.23	.01	.00
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	8	.26	.05	.13	.01	.01
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12155500 SNOHOMISH RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'38", long 122°05'52", in NE¼SE¼ sec.13, T.28 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, at former gaging station at old State Highway 9 bridge in Snohomish and at mile 12.7 (20.4 km).

DRAINAGE AREA.--1,714 mi² (4,439 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1959 to September 1961.
pH: July 1959 to September 1961.
WATER TEMPERATURES: July 1959 to September 1961.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data for the bimonthly water-quality samples listed below furnished by Washington State Department of Ecology. Coliform analyses for the diel study were performed by the Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	MEAN DAILY DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
11...	1335	3300	53	7.5	13.3	29	4	11.3	.08	.03	.02	.00
25...	1425	2600	61	7.3	9.3	21	1	11.0	.07	.03	.01	.00
NOV												
08...	1445	3200	57	7.1	9.3	21	1	10.6	.16	.03	.01	.01
16...	1340	5700	58	7.3	9.7	33	5	11.1	.26	.08	.01	.00
DEC												
06...	1425	3600	52	7.2	5.4	17	2	12.9	.27	.08	.01	.00
20...	1350	6400	48	7.0	5.1	29	4	12.9	.30	.09	.02	.00
JAN												
11...	1620	3600	55	7.2	2.3	13	3	13.2	.35	.07	.01	.00
24...	1430	8100	52	6.9	4.9	25	5	12.8	.49	.08	.02	.01
FEB												
01...	1435	4900	69	7.3	5.2	17	3	12.4	.38	.06	.03	.01
21...	1315	6100	44	7.0	7.0	42	2	11.5	.26	.04	.01	.01
MAR												
14...	1400	7000	53	7.1	6.0	21	3	12.2	.65	.08	.02	.01
29...	1520	8700	55	7.3	6.6	26	6	12.4	.58	.04	.02	.00
APR												
11...	1355	9500	52	8.7	8.9	21	4	12.1	.25	.04	.01	.00
25...	1500	21000	35	6.7	9.0	29	15	11.6	.15	.04	.05	.00
MAY												
09...	1515	9400	40	7.2	12.0	21	3	11.1	.20	.02	.01	.00
23...	1400	9800	35	7.0	10.5	17	3	11.3	.13	.03	.02	.00
JUN												
13...	1450	8800	35	7.2	14.9	17	2	10.4	.09	.03	.01	.00
27...	1410	4600	45	7.2	16.5	25	1	10.1	.13	.05	.01	.00
JUL												
05...	1435	4400	48	6.1	14.1	17	2	10.4	.11	.05	.02	.00
18...	1540	3700	55	7.4	16.9	17	2	9.8	.12	.04	.02	.00
AUG												
01...	1325	2100	58	6.8	21.2	21	3	8.9	.11	.03	.01	.00
09...	0900	1850	45	6.8	20.8	--	1	8.1	.11	.04	.02	.01
15...	1350	1700	64	7.1	21.6	13	1	8.1	.12	.02	.01	.00
SEP												
06...	1340	6500	45	7.9	15.5	38	5	10.9	.18	.06	.02	.00
19...	1440	2400	66	7.0	13.6	33	2	9.6	.14	.12	.08	.00

12155500 SNOHOMISH RIVER AT SNOHOMISH, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
09...	0900	1850	45	6.8	20.8	1	8.1	89	<1000	B27	21
09...	1300	1850	51	7.1	21.0	--	8.4	93	--	--	--
09...	1510	1850	54	7.2	21.9	1	8.5	96	B300	B27	--
09...	1815	1850	51	7.3	22.4	--	9.2	104	--	--	--
09...	2115	1850	55	7.4	22.8	1	9.4	108	B36	37	--
10...	0010	1850	58	7.4	22.7	--	9.3	106	--	--	--
10...	0210	1850	50	7.5	22.4	1	9.3	106	<100	32	--
10...	0405	1850	53	7.3	22.2	--	8.7	99	--	--	--
10...	0605	1850	53	7.2	20.2	--	8.4	92	--	--	--
10...	0810	1850	53	7.1	20.6	--	8.2	90	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
09...	0	6.1	1.5	2.2	.6	28	0	23	7.1	2.7
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	29	0	24	2.9	--
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
09...	2.1	.0	7.1	36	0	.11	.04	.15	.02	.01
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	0	.11	.04	.13	.02	.01
09...	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12157250 MISSION CREEK NEAR TULALIP, WA

LOCATION.--Lat 48°03'31", long 122°15'58", in SW¼NW¼ sec.26, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, on left bank at downstream side of highway crossing, 0.25 mi (0.4 km) above mouth, and 0.9 mi (1.4 km) east of Tulalip.

DRAINAGE AREA.--7.92 mi^2 (20.51 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m) from topographic map.

REMARKS.--Water-discharge records good. Some natural regulation in lakes and beaver ponds.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85 ft^3/s (2.41 m^3/s) Jan. 19, 1977, gage height, 4.11 ft (1.253 m), from rating curve extended above 20 ft^3/s (0.57 m^3/s), probably result of release of water from beaver ponds; minimum, 0.12 ft^3/s (0.003 m^3/s) June 29, 1977, probably result of beaver activity upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 85 ft^3/s (2.41 m^3/s) Jan. 19, gage height, 4.11 ft (1.253 m), from rating curve extended as explained above, probably result of release of water from beaver ponds; minimum, 0.12 ft^3/s (0.003 m^3/s) June 29, probably result of beaver activity upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	2.9	2.8	3.3	4.1	6.3	10	2.0	16	.34	.39	2.3
2	2.0	2.6	2.8	3.3	4.2	8.5	8.1	2.8	9.1	1.1	.36	1.6
3	2.3	2.3	3.0	3.3	3.9	20	6.0	6.6	5.8	1.1	.68	1.4
4	2.0	2.5	3.0	3.0	3.5	13	5.0	16	5.0	1.7	.33	1.9
5	2.5	2.8	3.0	2.6	3.3	7.8	4.4	15	4.6	1.8	.52	1.4
6	1.8	2.6	4.1	2.1	3.1	6.3	3.9	11	3.5	1.2	.53	.98
7	1.5	3.2	9.6	1.8	3.1	7.4	3.7	6.5	2.8	.75	.45	.79
8	1.7	3.2	8.2	1.6	3.0	9.4	3.7	5.2	2.2	.75	.52	2.7
9	1.7	3.2	5.8	1.4	2.8	13	3.8	3.7	1.9	.72	.41	1.1
10	2.3	3.2	4.3	1.2	3.7	10	3.8	3.4	2.0	.81	.68	.51
11	2.2	3.4	3.8	1.3	3.8	7.3	3.6	13	2.0	.86	.73	.57
12	2.3	3.2	3.6	3.1	3.9	6.4	3.3	14	1.4	1.3	.71	.42
13	1.9	3.0	3.4	5.8	3.7	5.4	4.2	6.9	1.3	1.2	.44	.55
14	2.0	3.0	3.0	7.2	3.5	5.3	4.4	5.7	1.4	1.2	.49	2.7
15	2.0	4.1	3.0	6.2	3.2	6.7	4.3	6.2	1.7	1.2	.31	.95
16	2.1	4.5	3.3	5.3	3.3	6.2	3.5	10	1.6	1.3	.28	.73
17	2.0	4.8	3.2	5.3	3.1	5.2	3.3	11	1.5	1.7	.32	.86
18	1.9	5.0	3.6	7.9	3.2	6.0	3.4	12	1.3	1.4	.33	1.0
19	2.0	4.8	3.4	20	3.1	6.9	3.6	8.4	1.3	1.3	.36	1.2
20	2.2	3.6	3.2	7.5	3.1	5.9	3.2	5.9	1.4	1.0	.42	2.1
21	2.1	3.8	3.0	5.6	4.4	5.2	3.1	4.8	1.2	.85	.45	4.8
22	2.4	3.6	3.2	4.8	4.6	4.6	3.1	4.2	.90	.80	.56	3.9
23	2.3	3.6	8.3	4.4	4.0	4.6	3.2	4.1	1.0	.69	16	5.7
24	2.7	4.1	7.8	4.1	3.7	4.2	3.2	6.0	.75	.67	12	13
25	3.5	5.3	5.7	3.9	3.4	3.9	2.7	5.2	.46	.68	9.3	9.2
26	4.0	3.6	6.6	3.7	3.5	5.1	3.6	5.8	.23	.58	7.5	5.1
27	3.6	3.4	6.3	3.5	3.5	7.6	3.6	4.2	.26	.67	6.0	3.9
28	6.0	3.2	5.1	3.5	4.6	6.9	3.0	3.8	.18	1.3	5.1	3.5
29	7.0	3.0	4.6	3.5	---	5.2	2.7	3.6	.13	2.5	4.0	3.3
30	4.5	2.8	3.9	3.4	---	4.4	2.6	3.5	.17	1.1	3.5	3.2
31	3.3	---	3.6	3.6	---	5.6	---	6.7	---	.44	2.9	---
TOTAL	81.6	104.3	138.0	137.2	100.3	220.3	120.0	217.2	73.08	33.01	76.55	81.36
MEAN	2.63	3.48	4.45	4.43	3.58	7.11	4.00	7.01	2.44	1.06	2.47	2.71
MAX	7.0	5.3	9.6	20	4.6	20	10	16	16	2.5	16	13
MIN	1.5	2.3	2.8	1.2	2.8	3.9	2.6	2.0	.13	.34	.28	.42
CFSM	.33	.44	.56	.56	.45	.90	.51	.89	.31	.13	.31	.34
IN.	.38	.49	.65	.64	.47	1.03	.56	1.02	.34	.16	.36	.38
AC-FT	162	207	274	272	199	437	238	431	145	65	152	161

CAL YR 1976 TOTAL 2066.50 MEAN 5.65 MAX 35 MIN 1.0 CFSM .71 IN 9.71 AC-FT 4100
WTR YR 1977 TOTAL 1382.90 MEAN 3.79 MAX 20 MIN .13 CFSM .48 IN 6.49 AC-FT 2740

12157250 MISSION CREEK NEAR TULALIP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to March 1977 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1974 to September 1976.

WATER-QUALITY DATA, OCTOBER 1976 TO MARCH 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)
OCT . 1976 06...	1220	1.6	--	11.7	--	B300	B10	--
NOV 03...	1257	2.5	--	8.9	--	B1030	--	<1
MAR . 1977 08...	1300	8.3	83	6.6	11.1	B94	--	86

DATE	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT . 1976 06...	--	--	--	--	--	--	--
NOV 03...	--	--	--	--	--	--	--
MAR . 1977 08...	.44	.01	.17	.38	.55	.04	.03

B Results based upon colony counts outside the ideal range.

12158040 TULALIP CREEK AT TULALIP, WA

LOCATION.--Lat 48°04'09", long 122°17'08", in NW¼SW¼ sec.22, T.30 N., R.4 E., Snohomish County, Hydrologic Unit 17110019, Tulalip Indian Reservation, on left bank 600 ft (183 m) upstream from highway crossing, 0.15 mi (0.24 km) east of Tulalip and 0.35 mi (0.56 km) above mouth.

DRAINAGE AREA.--15.4 mi^2 (39.9 km^2).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (18 m), from topographic map.

REMARKS.--Water-discharge records good. Some regulation by manipulation of planks in a wooden flume at outlet of Lake Shoecraft (12158000), drainage area 6.12 mi^2 (15.9 km^2), and natural regulation in lakes and beaver ponds in basin. Minor diversions above station by town of Tulalip for fish pond and domestic use from East Fork Tulalip Creek.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66 ft^3/s (1.87 m^3/s) Apr. 26, 1977, gage height, 3.80 ft (1.158 m); minimum, 2.0 ft^3/s (0.057 m^3/s) Aug. 12, 1977, gage height, 2.66 ft (0.811 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 66 ft^3/s (1.87 m^3/s) Apr. 26, gage height, 3.80 ft (1.158 m); minimum, 2.0 ft^3/s (0.057 m^3/s) Aug. 12, gage height, 2.66 ft (0.811 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	7.8	6.7	6.7	7.8	13	22	6.6	27	6.8	7.7	6.4
2	7.4	7.8	6.7	6.7	7.4	15	13	8.9	14	11	5.4	6.5
3	7.8	7.1	7.1	6.7	7.1	28	11	15	11	7.8	4.3	7.2
4	6.7	7.4	6.7	6.7	6.7	15	10	24	11	7.4	4.1	7.3
5	6.7	7.8	6.7	6.3	6.4	11	10	23	10	5.9	4.6	6.9
6	6.3	7.8	8.6	6.1	6.3	10	9.5	12	9.5	5.9	4.3	6.1
7	5.5	7.8	19	6.0	6.2	12	8.6	9.1	8.5	5.5	4.4	5.8
8	5.9	7.8	14	5.8	6.0	16	8.6	7.9	7.7	5.7	4.3	5.8
9	6.3	7.8	10	5.6	5.8	22	9.1	7.3	7.3	5.4	4.6	5.4
10	7.4	7.8	8.6	5.4	7.7	13	8.2	7.6	6.7	5.7	4.2	5.4
11	7.1	8.2	8.2	5.8	8.5	11	8.2	22	6.4	6.0	4.3	5.4
12	6.7	7.8	7.8	11	9.1	10	7.8	14	6.3	7.1	3.7	5.3
13	6.3	7.8	7.4	11	8.1	10	8.2	9.6	6.3	6.2	4.0	5.3
14	5.9	7.8	7.4	13	7.9	10	7.4	9.5	6.4	5.8	4.0	5.4
15	6.3	11	7.1	11	7.6	12	7.4	15	6.5	5.6	4.4	5.5
16	7.1	10	7.4	10	7.3	11	7.1	21	6.4	6.4	4.5	5.7
17	6.7	11	8.2	11	7.1	10	7.4	17	6.5	8.3	4.2	5.5
18	6.7	11	9.1	16	7.1	11	8.6	16	6.0	6.1	4.2	5.6
19	6.7	9.5	7.8	13	7.1	14	7.8	13	6.1	5.7	4.6	6.0
20	7.1	9.5	7.1	10	7.4	12	7.4	10	6.5	5.6	4.7	6.6
21	6.7	9.5	7.4	8.2	10	11	7.1	9.8	6.6	5.6	4.8	9.3
22	7.4	9.1	7.4	7.4	9.1	11	7.1	9.6	6.9	5.6	5.1	6.9
23	7.1	8.6	16	7.4	8.2	10	9.1	11	6.3	5.6	9.9	11
24	8.6	10	12	7.1	7.4	10	12	14	6.1	5.4	16	22
25	12	13	10	6.7	7.4	9.5	13	11	6.5	5.3	13	11
26	13	10	13	6.3	8.2	13	39	12	6.2	5.4	14	7.7
27	10	7.1	11	6.3	7.8	16	15	9.7	6.0	5.3	9.8	6.5
28	15	6.7	8.6	6.3	11	12	10	9.0	6.3	5.3	8.4	8.2
29	15	6.7	7.8	6.7	---	11	8.8	8.3	6.8	6.4	9.2	9.1
30	11	6.7	8.6	6.7	---	10	7.6	8.0	6.7	6.0	9.5	7.4
31	8.2	---	7.1	7.1	---	15	---	18	---	5.4	7.3	---
TOTAL	246.5	257.9	280.5	250.0	213.7	394.5	316.0	388.9	240.5	191.2	197.5	218.2
MEAN	7.95	8.60	9.05	8.06	7.63	12.7	10.5	12.5	8.02	6.17	6.37	7.27
MAX	15	13	19	16	11	28	39	24	27	11	16	22
MIN	5.5	6.7	6.7	5.4	5.8	9.5	7.1	6.6	6.0	5.3	3.7	5.3
CFSM	.52	.56	.59	.52	.50	.83	.68	.81	.52	.40	.41	.47
IN.	.60	.62	.68	.60	.52	.95	.76	.94	.58	.46	.48	.53
AC-FT	489	512	556	496	424	782	627	771	477	379	392	433

CAL YR 1976 TOTAL 4670.2 MEAN 12.8 MAX 52 MIN 5.2 CFSM .83 IN 11.28 AC-FT 9260
WTR YR 1977 TOTAL 3195.4 MEAN 8.75 MAX 39 MIN 3.7 CFSM .57 IN 7.72 AC-FT 6340

12158040 TULALIP CREEK AT TULALIP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1975 to March 1977 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1974 to September 1976.

WATER-QUALITY DATA, OCTOBER 1976 TO MARCH 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)
OCT , 1976								
06...	0945	6.3	--	10.6	--	B600	38	--
NOV								
03...	1305	7.4	--	7.2	--	B1600	--	B17
MAR , 1977								
08...	1115	14	100	6.2	10.8	260	--	B11

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT , 1976									
06...	--	--	--	--	--	--	--	--	--
NOV									
03...	--	--	--	--	--	--	--	--	--
MAR , 1977									
08...	41	5	7.2	5.7	5.9	1.5	44	36	7.9

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT , 1976								
06...	--	--	--	--	--	--	--	--
NOV								
03...	--	--	--	--	--	--	--	--
MAR , 1977								
08...	5.7	.69	.01	.16	.41	.57	.08	.06

B Results based upon colony counts outside the ideal range.

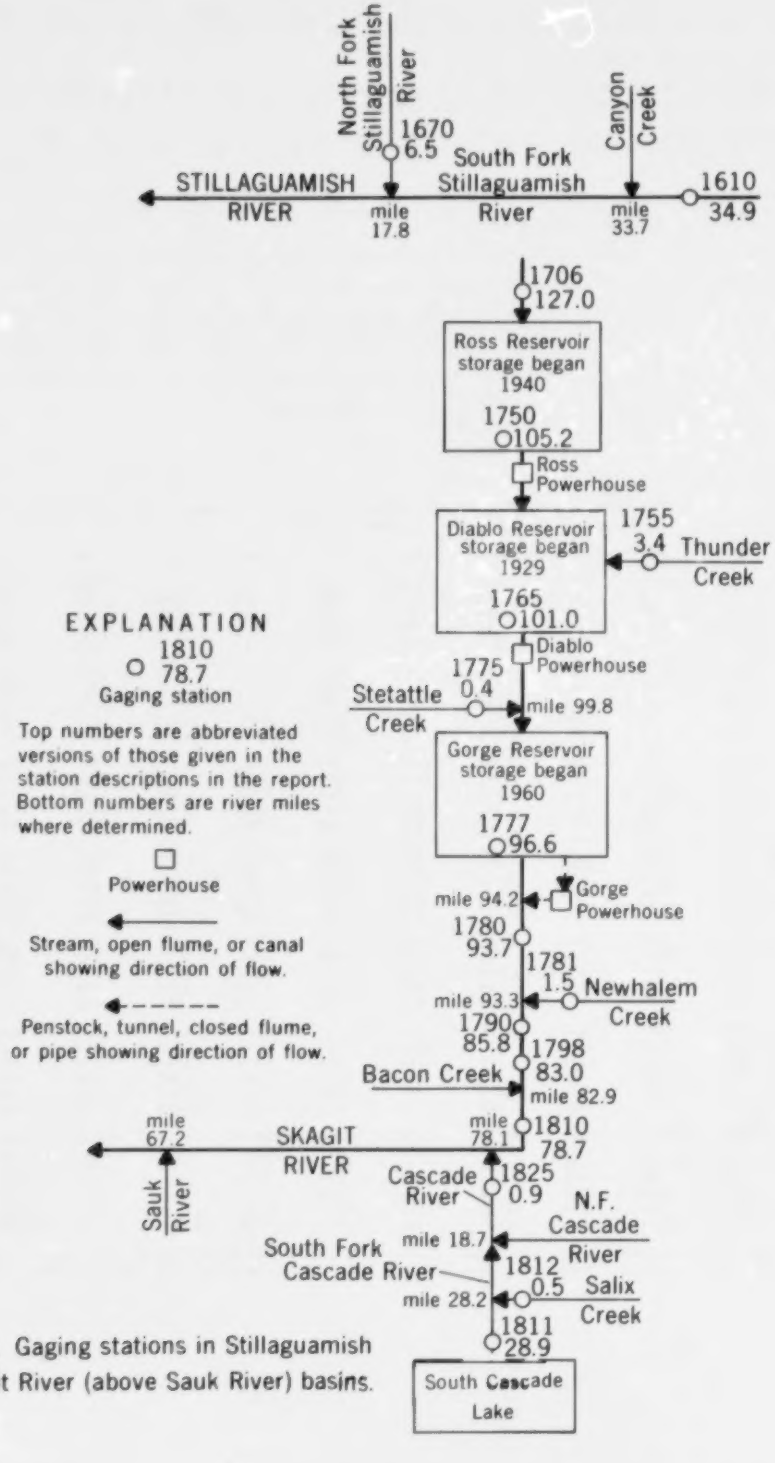
North Fork Stillaguamish River
1670
6.5
Canyon Creek
South Fork Stillaguamish River
STILLAGUAMISH RIVER
mile 17.8
mile 33.7
1610
34.9
1706
127.0
Ross Reservoir storage began 1940
1750
105.2
Ross Powerhouse
Diablo Reservoir storage began 1929
1765
101.0
1755
3.4
Thunder Creek
Diablo Powerhouse
1775
0.4
Stetattle Creek
mile 99.8
Gorge Reservoir storage began 1960
1777
96.6
mile 94.2
Gorge Powerhouse
1780
93.7
1781
1.5
Newhalem Creek
mile 93.3
1790
85.8
1798
83.0
Bacon Creek
mile 82.9
mile 78.1
1810
78.7
SKAGIT RIVER
mile 67.2
Sauk River
Cascade River
1825
0.9
N.F. Cascade River
mile 18.7
South Fork Cascade River
1812
0.5
Salix Creek
mile 28.2
1811
28.9
South Cascade Lake
EXPLANATION
1810
78.7
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 16. Gaging stations in Stillaguamish and Skagit River (above Sauk River) basins.

12161000 SOUTH FORK STILLAGUAMISH RIVER NEAR GRANITE FALLS, WA

LOCATION.--Lat 48°06'13", long 121°56'37", in SW¼NW¼ sec.8, T.30 N., R.7 E., Snohomish County, Hydrologic Unit 17110008, on right bank 0.3 mi (0.5 km) upstream from county road bridge, 1.2 mi (1.9 km) upstream from Canyon Creek, 1.6 mi (2.6 km) northeast of Granite Falls, and at mile 34.9 (56.2 km).

DRAINAGE AREA.--119 mi² (308 km²).

PERIOD OF RECORD.-- December 1902 to July 1903 (gage heights only), July 1928 to current year. Published as "at Robe" 1902-3. Chemical analyses July 1959 to September 1966, October 1973 to September 1974.

REVISED RECORDS.--WSP 902: 1939. WSP 1286: 1929-31(M), 1932, 1935, 1937(M), 1939(P), 1940-41(M), 1943(P), 1947(P). WSP 1736: 1932-35(M), 1944(M), 1946-48(M), 1951(M), 1957(M). WSP 1932: 1938(P), 1945(P), 1950(P), 1956(P), 1959(P).

GAGE.--Water-stage recorder. Altitude of gage is 310 ft (94 m), from river-profile map. Prior to Aug. 31, 1928, nonrecording gage at site 8 mi (13 km) upstream at different datum. Aug. 31 to Sept. 30, 1928, nonrecording gage at present site and datum.

REMARKS.--Records good. Some small diversion for domestic use above station. No regulation.

AVERAGE DISCHARGE.--49 years, 1,080 ft³/s (30.59 m³/s) 123.25 in/yr (3,131 mm/yr) 782,500 acre-ft/yr (965 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,400 ft³/s (918 m³/s) Feb. 26, 1932, gage height, 19.7 ft (6.00 m), from graph based on gage readings, from rating curve extended above 21,000 ft³/s (595 m³/s); minimum, 55 ft³/s (1.56 m³/s) Sept. 23, 24, 1958; minimum gage height, 2.99 ft (0.911 m) Aug. 19-21, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,700 ft³/s (246 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1045	*16,800	476	*13.96	4.255

Minimum discharge, 140 ft³/s (3.96 m³/s) Aug. 23, gage height, 3.36 ft (1.024 ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	1000	346	492	505	876	736	1370	2350	315	237	604
2	223	650	318	443	374	694	648	2290	1340	419	227	475
3	430	510	293	398	322	736	587	2570	1010	424	220	858
4	309	425	270	357	294	593	648	2190	1960	482	214	1440
5	229	370	251	314	279	520	941	1520	1600	456	205	1190
6	214	330	258	236	262	940	1540	1100	1980	384	227	675
7	197	300	1300	265	248	1940	2070	1040	1550	315	199	515
8	186	285	2690	243	241	2030	2290	1130	1250	292	187	438
9	177	265	1880	235	237	2010	1620	1050	872	287	182	379
10	394	247	1070	230	748	1220	1140	1250	777	279	175	330
11	802	230	1020	236	1050	895	1080	1330	779	298	170	294
12	444	220	844	960	2140	967	882	926	740	453	167	269
13	314	205	780	599	1920	754	1510	823	727	363	167	248
14	261	190	678	538	915	637	1050	939	721	295	165	234
15	231	453	1260	867	664	609	867	891	672	269	157	220
16	210	952	1260	1440	587	582	1030	986	680	263	150	208
17	198	1970	1550	4920	889	595	845	787	646	628	150	199
18	188	1300	1520	10700	1210	510	782	756	691	465	147	190
19	180	700	899	2570	796	560	698	707	650	335	148	256
20	173	600	683	1270	648	520	608	712	566	283	148	1500
21	166	530	575	908	754	676	591	1530	526	259	142	1730
22	161	540	510	730	1270	882	794	1110	630	248	142	769
23	160	440	675	689	1010	1410	1400	1080	546	237	150	802
24	165	520	549	520	694	1140	2140	1310	470	227	433	1540
25	1240	1910	668	460	615	921	2410	969	489	222	1340	1030
26	1030	892	5090	415	593	1130	2660	1270	431	222	954	689
27	582	605	3420	374	1260	2120	1540	990	385	217	742	539
28	619	485	1370	342	1150	1100	1320	1040	356	213	676	475
29	685	421	919	314	---	863	1360	883	333	480	2820	583
30	597	378	714	294	---	736	1270	743	310	355	1680	663
31	1070	---	581	415	---	710	---	1200	---	265	856	---
TOTAL	12035	18003	35041	32774	21675	29394	36977	36412	25565	10242	13577	19342
MEAN	388	600	1130	1057	774	948	1233	1175	852	330	438	645
MAX	1240	1970	5090	10700	2140	2120	2660	2570	2350	628	2820	1730
MIN	160	190	251	230	237	505	587	707	310	213	142	190
CFSM	3.26	5.04	9.50	8.88	6.50	7.97	10.4	9.87	7.16	2.77	3.68	5.42
IN.	3.76	5.63	10.95	10.25	6.78	9.19	11.56	11.38	7.99	3.20	4.24	6.05
AC-FT	23870	35710	69500	65010	42990	58300	73340	72220	50710	20320	26930	38360

CAL YR 1976 TOTAL 362443 MEAN 992 MAX 11000 MIN 160 CFSM 8.34 IN 113.47 AC-FT 720000
WTR YR 1977 TOTAL 291037 MEAN 797 MAX 10700 MIN 142 CFSM 6.70 IN 90.98 AC-FT 577300

12167000 NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WA

LOCATION.--Lat 48°15'42", long 122°02'47", in SE¼NW¼ sec.16, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, on right bank 5.7 mi (9.2 km) northeast of Arlington, 7.8 mi (12.6 km) downstream from Deer Creek, and at mile 6.5 (10.5 km).

DRAINAGE AREA.--262 mi² (679 km²).

PERIOD OF RECORD.--July 1928 to current year. Chemical analyses November 1961 to September 1971, October 1973 to September 1974.

REVISED RECORDS.--WSP 1286: 1938-39. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 89.34 ft (27.231 m) above mean sea level.

REMARKS.--Records good. No regulation. Small diversions for domestic use.

AVERAGE DISCHARGE.--49 years, 1,901 ft³/s (53.84 m³/s) 98.53 in/yr (2,503 mm/yr), 1,377,000 acre-ft/yr (1,700 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,600 ft³/s (867 m³/s) Feb. 9, 1951; maximum gage height, 13.46 ft (4.103 m) Feb. 10, 11, 1951; minimum discharge, 117 ft³/s (3.31 m³/s) Sept. 23, 1938; minimum gage height 0.97 ft (0.296 m) Sept. 10, 12, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s (368 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1100	*23,500	666	*11.68	3.560

Minimum discharge, 214 ft³/s (6.06 m³/s) Aug. 20, 21, gage height, 2.21 ft (0.674 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390	1650	605	1070	988	1660	1650	2120	4300	514	380	636
2	385	1130	557	952	739	1330	1500	2780	2840	556	370	569
3	605	898	505	846	640	1330	1350	3590	2140	582	365	1360
4	487	755	475	739	598	1150	1400	3570	2560	636	360	1630
5	412	647	439	626	570	1020	1080	2910	2570	576	355	1240
6	395	577	511	584	544	1210	2720	2230	2310	532	350	832
7	360	531	2140	537	518	2550	3380	1980	2230	484	330	657
8	340	499	2690	487	499	3510	3740	1970	1910	462	317	563
9	322	475	2980	434	499	3110	2700	1760	1480	451	308	496
10	577	439	1820	423	987	2630	2190	1880	1310	440	303	446
11	1110	486	1750	457	2310	1990	1920	2100	1240	457	299	605
12	662	385	1490	1540	2180	2000	1670	1620	1160	569	294	380
13	499	360	1390	1140	2480	1620	2200	1450	1090	502	294	350
14	428	340	1220	1050	1450	1390	1880	1690	1050	451	286	330
15	385	883	1070	1430	1160	1280	1570	2120	992	430	286	317
16	355	1590	1800	1730	1010	1100	1550	1800	920	430	278	303
17	331	3460	3220	8300	1330	1050	1380	1590	920	864	270	290
18	313	2220	3290	10600	2080	1090	1360	1540	944	602	266	278
19	295	1380	1890	4780	1400	1080	1240	1400	920	479	250	296
20	279	980	1440	2630	1190	1040	1130	1320	840	435	246	1170
21	271	863	1210	1900	1340	1400	1090	1910	745	420	234	2060
22	259	871	1080	1520	1080	2060	1390	1630	808	410	226	1090
23	251	707	1280	1270	1750	2790	2180	1580	765	400	262	976
24	251	854	1080	1110	1330	1990	3080	2120	678	390	752	2300
25	2360	2720	1050	979	1160	1730	3510	1650	678	385	1970	1800
26	1750	1380	9740	871	1190	2250	4280	1900	636	385	1300	1130
27	943	1020	6920	795	1680	3900	2840	1560	595	380	864	888
28	1010	863	2870	723	1990	2490	2320	1480	563	380	992	808
29	1160	767	1940	670	---	2080	2240	1340	544	516	2160	1290
30	837	677	1530	626	---	1710	2050	1170	520	462	1210	1160
31	1370	---	1260	763	---	1680	---	2060	---	400	824	---
TOTAL	19392	30155	62042	55582	35172	57220	63450	59900	48254	14978	17009	26128
MEAN	626	1005	2001	1793	1256	1846	2115	1932	1342	483	549	871
MAX	2360	3460	9740	10600	2480	3900	4280	3590	4300	864	2160	2300
MIN	251	340	439	423	499	1020	1090	1170	520	380	226	278
CFSM	2.39	3.84	7.64	6.84	4.79	7.05	8.07	7.37	5.12	1.84	2.10	3.32
IN.	2.75	4.28	8.81	7.89	4.99	8.12	9.01	8.50	5.72	2.13	2.42	3.71
AC-FT	38460	59810	123100	110200	69760	113500	125900	118800	79840	29710	33740	51820

CAL YR 1976 TOTAL 685410 MEAN 1873 MAX 18400 MIN 251 CFSM 7.15 IN 97.32 AC-FT 1360000
WTR YR 1977 TOTAL 481282 MEAN 1319 MAX 10600 MIN 226 CFSM 5.03 IN 68.33 AC-FT 954600

12167700 STILLAGUAMISH RIVER NEAR SILVANA, WA

LOCATION.--Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, at south bound bridge on U.S. Highway I-5, 1.5 mi (2.4 km) east of Silvana, 6.7 mi (10.8 km) downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1 (17.9 km).

DRAINAGE AREA.--557 mi² (1,443 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974, October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data for the bimonthly water-quality samples listed below furnished by Washington State Department of Ecology. Coliform analyses for the diel study were performed by the Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)
OCT												
12...	0900	1610	51	7.3	11.1	95	9	10.2	20	0	5.1	1.7
26...	0945	4800	40	7.2	8.5	200	25	11.1	17	5	5.0	1.2
NOV												
09...	0920	1030	95	7.4	9.0	25	2	10.5	29	0	7.6	2.5
17...	0910	5600	41	7.3	9.7	110	35	10.9	14	0	3.5	1.3
DEC												
07...	0920	2050	70	7.5	5.0	46	7	12.7	27	2	7.0	2.6
21...	0820	2500	60	7.3	4.8	13	4	13.0	22	6	5.6	1.9
JAN												
12...	1100	3710	68	7.5	2.7	25	20	12.8	28	2	7.2	2.4
25...	0825	2350	65	7.0	2.4	17	4	13.3	24	1	6.5	1.9
FEB												
02...	0815	1950	76	7.3	4.6	42	7	12.3	26	5	6.8	2.1
22...	0940	2050	59	7.1	6.5	55	10	11.6	20	1	5.4	1.7
MAR												
15...	0805	2800	65	7.3	5.2	25	6	12.5	22	1	5.4	2.0
30...	0930	3400	60	7.6	5.5	35	15	12.5	23	5	6.1	1.8
APR												
12...	0825	3360	54	7.1	7.2	25	5	11.9	20	3	5.6	1.4
26...	1045	8650	30	7.1	7.6	46	30	12.0	15	5	4.6	.8
MAY												
10...	0950	3900	49	7.0	10.5	29	5	10.5	20	5	5.9	1.3
24...	0820	4350	49	7.3	8.5	29	10	11.5	18	3	4.9	1.4
JUN												
14...	0920	2230	54	7.4	14.0	25	3	9.9	23	4	6.1	1.8
28...	0900	1080	66	7.0	15.9	21	2	9.9	25	2	7.0	1.9
JUL												
06...	0900	1100	68	7.1	13.0	29	3	10.6	27	4	7.4	2.0
19...	0945	1040	62	7.4	14.7	42	3	9.9	28	5	8.0	2.0
AUG												
01...	1015	670	71	7.4	19.6	--	1	9.2	30	0	8.2	2.4
01...	1525	670	74	7.5	22.0	--	1	9.3	--	--	--	--
02...	0930	630	82	7.1	19.7	17	2	8.4	32	1	8.5	2.5
16...	0855	511	90	7.2	20.0	21	1	9.1	37	2	9.5	3.2
SEP												
07...	0945	520	60	8.4	13.5	30	4	10.5	25	4	7.0	1.9
20...	0920	1230	81	7.4	12.5	21	1	10.0	33	4	8.7	2.8

12167700 STILLAGUAMISH RIVER NEAR SILVANA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
12...	1.5	.6	26	0	21	2.1	4.1	1.6	.00	.07	.03	.00
26...	1.0	.5	15	0	12	1.5	5.5	1.6	.41	.13	.11	.01
NOV												
04...	3.1	.7	36	0	30	2.3	3.5	2.0	.17	.03	.01	.00
17...	1.7	2.5	17	0	14	1.4	4.2	1.7	.30	.12	.09	.00
DEC												
07...	2.2	.7	31	0	25	1.6	3.8	2.3	.40	.10	.04	.00
21...	1.7	.4	20	0	16	1.6	6.6	1.9	.43	.06	.02	.00
JAN												
12...	2.3	1.2	32	0	26	1.6	5.7	2.2	.66	.11	.11	.00
25...	1.9	.4	28	0	23	4.5	3.1	2.0	.47	.04	.02	.00
FEB												
02...	2.1	.6	26	0	21	2.1	6.3	2.3	.37	.06	.02	.00
22...	1.4	.5	23	0	19	2.9	3.9	1.5	.31	.06	.04	.00
MAR												
15...	1.9	.4	25	0	21	2.0	--	2.0	.56	.08	.02	.00
30...	1.7	.4	22	0	18	.9	7.7	2.2	.46	.05	.03	.01
APR												
12...	1.6	.4	20	0	16	2.5	3.7	1.7	.23	.04	.02	.00
25...	.9	.3	12	0	10	1.5	4.6	1.4	.13	.04	.16	.01
MAY												
10...	1.2	.3	18	0	15	2.9	5.2	1.6	.19	.03	.02	.00
26...	1.4	.4	18	0	15	1.4	2.8	1.3	.10	.10	.03	.00
JUN												
16...	1.8	.5	23	0	19	1.5	4.5	1.7	.16	.07	.01	.00
28...	2.0	.6	28	0	23	4.5	3.5	2.1	.12	.04	.00	.00
JUL												
06...	2.0	.5	28	0	23	3.6	3.7	1.8	.11	.04	.01	.00
19...	1.8	.5	28	0	23	1.8	2.3	1.7	.10	.05	.01	.00
AUG												
01...	2.4	.6	38	0	31	2.4	5.5	2.9	.12	.04	.02	.00
01...	--	--	38	--	31	1.9	--	--	.12	.09	.02	.00
02...	2.5	1.0	37	0	30	4.7	4.4	3.2	.13	.04	.01	.00
16...	2.8	.7	43	0	35	4.3	3.5	2.5	.06	.02	.01	.00
SEP												
07...	1.6	.5	26	0	21	.2	3.2	1.6	.16	.04	.01	.00
20...	2.5	.8	36	0	30	2.3	2.9	2.5	.07	.02	.01	.00

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./ 100 ML)	HARD-NESS (CA,MG) (MG/L)
AUG											
01...	1015	670	71	7.4	19.6	1	9.2	99	B300	120	30
01...	1100	670	73	7.5	20.2	--	8.7	95	--	--	--
01...	1305	675	73	7.6	20.8	--	9.6	106	--	--	--
01...	1525	670	74	7.5	22.0	1	9.3	105	460	35	--
01...	1745	670	76	7.6	22.6	--	9.2	105	--	--	--
01...	2015	670	75	7.6	21.9	1	9.0	101	B67	B17	--
01...	2225	670	72	7.5	21.4	--	8.7	97	--	--	--
02...	0010	670	69	7.5	21.0	--	8.6	95	--	--	--
02...	0210	680	69	7.6	20.6	1	8.4	92	B200	56	--
02...	0410	680	69	7.5	20.0	--	8.3	90	--	--	--
02...	0645	680	69	7.5	19.3	--	8.4	90	--	--	--

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
AUG										
01...	0	8.2	2.4	2.4	.6	38	0	31	2.4	5.5
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	38	0	31	1.9	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

12167700 STILLAGUAMISH RIVER NEAR SILVANA, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SUS-PENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
AUG										
01...	2.9	.0	8.6	53	26	.12	.06	.13	.02	.00
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	25	.12	.09	.14	.02	.00
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

12170300 STILLAGUAMISH RIVER NEAR STANWOOD, WA

LOCATION.--Lat 48°12'41", long 122°20'10", in SE¼SE¼ sec.31, T.32 N., R.4 E., Snohomish County, Hydrologic Unit 17110008, at Hat Slough bridge, 2.1 mi (3.4 km) south of Stanwood.

PERIOD OF RECORD.--Water years October 1976 to September 1977 (discontinued).

REMARKS.--No discharge records available.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT											
12...	0835	49	7.2	11.5	110	8	10.1	.13	.00	.03	.00
26...	0915	44	7.2	8.5	265	20	10.0	.51	.16	.15	.01
NOV											
09...	0855	42	7.1	9.0	33	1	10.6	.23	.03	.02	.00
17...	0840	38	6.9	10.3	140	50	10.9	.26	.11	.14	.00
DEC											
07...	0850	72	7.5	5.0	55	8	12.7	.43	.00	.04	.00
21...	0800	62	7.3	4.0	33	3	12.9	.47	.06	.01	.00
JAN											
12...	1010	65	7.4	2.4	21	5	12.6	.60	.07	.02	.00
25...	0800	75	7.2	2.0	25	4	13.2	.55	.07	.02	.00
FEB											
02...	0750	76	7.2	4.5	55	10	12.6	.43	.09	.03	.00
22...	0915	59	7.1	6.0	65	8	11.4	.36	.06	.03	.01
MAR											
15...	0750	70	7.0	5.3	20	5	12.4	.63	.08	.02	.00
30...	0850	65	7.2	5.0	30	6	12.0	.54	.04	.03	.00
APR											
12...	0755	55	7.2	7.4	29	5	11.0	.27	.05	.04	.00
26...	1015	35	6.9	8.4	38	20	12.0	.16	.04	.07	.01
MAY											
10...	0925	50	7.0	11.0	29	4	10.2	.25	.03	.02	.00
24...	0800	50	7.3	8.9	25	6	11.3	1.2	.19	.03	.00
JUN											
14...	0850	55	7.2	14.2	25	5	9.7	.16	.04	.01	.00
28...	0835	70	6.9	16.5	21	1	9.4	.21	.04	.01	.01
JUL											
06...	0825	70	7.0	13.4	29	3	10.2	.11	.05	.01	.00
19...	0905	65	7.1	15.0	54	3	9.6	.11	.05	.01	.00
AUG											
02...	0800	65	6.9	19.9	21	2	8.2	.13	.05	.01	.00
16...	0820	107	7.3	20.3	13	2	9.0	.06	.03	.01	.00
SEP											
07...	0800	62	--	14.2	38	4	10.4	.16	.05	.02	.00
20...	0855	89	7.3	13.1	21	1	9.6	.07	.03	.05	.00

12170600 SKAGIT RIVER AT INTERNATIONAL BOUNDARY, NEAR HOPE, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°00'01", long 121°04'15", on left bank at international boundary, approximately 31 mi (50 km) southeast of Hope, and at mile 127.0 (204.3 km).

DRAINAGE AREA.--381 mi² (987 km²), of which 3 mi² (7.8 km²) is in the United States.

PERIOD OF RECORD.--December 1953 to current year (gage heights or elevations only).

GAGE.--Water-stage recorder. Datum of gage is 1,583.44 ft (482.633 m) above mean sea level, U.S. Coast and Geodetic Survey datum of 1929, supplementary adjustment of 1947; 1,582.53 ft (482.355 m) above Geodetic Survey of Canada 1959 datum; 1,584.07 ft (482.825 m) above city of Seattle 1936 datum; and 1,581.65 ft (482.087 m) above city of Seattle Ross Dam datum (by water level transfer in 1955). Prior to Apr. 15, 1955, nonrecording gage at present site and datum. Apr. 15, 1955 to Dec. 8, 1960, water-stage recorder at site 300 ft (91 m) upstream at present datum.

REMARKS.--No diversion above station.--Stage subject to backwater from Ross Reservoir. Starting about July 1, 1967, the taintor gates at Ross Dam were extended to elevation, 1,602.50 ft (488.442 m) city of Seattle Ross Dam datum.

COOPERATION.--This station is maintained by Canada under agreement with the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 21.44 ft (6.535 m) Aug. 24, 1976; minimum observed, 1.25 ft (0.381 m) Mar. 5, 1955.

EXTREMES FOR CURRENT YEAR.-- Maximum daily gage height, 19.90 ft (6.066 m) Oct. 1; minimum daily recorded, 4.22 ft (1.286 m) Jan. 16.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.90	17.31	5.75	4.60	---	4.56	4.38	6.62	5.82	5.30	4.88	5.25
2	19.69	17.10	5.13	4.57	---	4.52	4.38	6.68	5.93	5.33	4.88	5.25
3	19.33	16.76	4.94	4.54	---	4.49	4.36	6.67	5.91	5.29	4.89	5.26
4	19.16	16.51	4.91	4.51	---	4.47	4.36	6.52	5.90	5.25	4.90	5.29
5	19.13	16.12	4.76	4.46	---	4.45	4.41	6.33	5.90	5.20	4.90	5.32
6	19.09	15.88	4.70	---	---	4.43	4.67	6.10	6.22	5.15	4.90	5.36
7	19.05	15.65	4.67	---	---	4.50	4.78	6.05	6.71	5.09	4.90	5.39
8	19.09	15.40	4.66	---	---	4.68	5.36	6.01	6.97	5.06	4.91	5.41
9	19.12	14.96	4.61	---	---	4.75	5.49	6.02	6.77	5.01	4.91	5.42
10	19.22	14.60	4.56	---	---	4.75	5.37	6.00	6.53	4.99	4.91	5.42
11	19.30	13.94	4.56	4.23	---	4.71	5.16	6.10	6.41	4.96	4.92	5.43
12	19.37	13.31	4.58	4.23	---	4.66	5.03	6.02	6.47	4.96	4.93	5.43
13	19.36	12.79	4.65	4.23	---	4.62	4.97	5.95	6.43	4.95	4.97	5.43
14	19.27	12.59	4.66	4.24	---	4.58	4.88	5.86	6.36	4.93	4.99	5.43
15	19.09	12.36	4.62	4.24	---	4.55	4.79	5.79	6.31	4.89	5.00	5.42
16	18.88	11.56	4.63	4.22	---	4.53	4.89	5.76	6.27	4.88	5.00	5.41
17	18.75	11.66	4.66	4.23	---	4.50	4.83	5.70	6.23	4.96	4.99	5.41
18	18.62	11.48	4.69	4.70	---	4.47	4.83	5.66	6.24	4.97	5.00	5.41
19	18.45	11.05	4.70	5.01	---	4.44	4.81	5.66	6.25	4.92	5.00	5.41
20	18.29	10.69	4.70	5.33	---	4.42	4.82	5.67	6.19	4.88	5.02	5.43
21	18.16	10.51	4.67	5.06	---	4.40	4.81	5.73	6.09	4.85	5.03	5.46
22	17.99	10.25	4.65	4.92	---	4.40	4.81	5.85	5.99	4.83	5.07	5.46
23	17.86	9.88	4.63	4.86	---	---	4.90	5.96	5.91	4.81	5.09	5.45
24	17.89	9.59	4.61	4.70	4.65	---	5.40	6.02	5.88	4.80	5.14	5.47
25	17.95	9.48	4.59	4.72	4.64	4.45	6.25	5.97	5.75	4.70	5.10	5.48
26	17.85	9.32	4.68	4.68	4.60	4.44	6.86	5.92	5.69	4.88	5.19	5.47
27	17.73	8.96	4.82	4.62	4.56	4.44	6.87	5.87	5.62	4.89	5.21	5.46
28	17.63	8.67	4.77	4.57	4.56	4.44	6.71	5.80	5.54	4.85	5.21	5.41
29	17.56	7.67	4.73	---	---	4.43	6.63	5.72	5.47	4.85	5.27	5.38
30	17.42	6.73	4.69	---	---	4.41	6.61	5.66	5.43	4.96	5.30	5.36
31	17.38	---	4.66	---	---	4.40	---	5.65	---	4.98	5.29	---
MEAN	18.63	12.39	4.72	---	---	---	5.20	5.98	6.11	4.98	5.03	5.40
MAX	19.90	17.31	5.75	---	---	---	6.87	6.68	6.97	5.30	5.30	5.48
MIN	17.38	6.73	4.56	---	---	---	4.36	5.65	5.43	4.70	4.88	5.25

12175000 ROSS RESERVOIR NEAR NEWHALEM, WA

(International gaging station)

LOCATION.--Lat 48°43'56", long 121°04'02", in NE¼ sec.35, T.38 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Ross Dam on Skagit River 1.0 mi (1.6 km) downstream from Ruby Creek, 9.1 mi (14.6 km) northeast of Newhalem, and at mile 105.2 (169.3 km).

DRAINAGE AREA.--999 mi² (2,587 km²), of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--March 1940 to current year (monthend elevations and contents only prior to October 1946). Prior to October 1943, published as Ruby Reservoir near Newhalem.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (city of Seattle Ross Dam datum); 1.79 ft (0.546 m) above mean sea level, U.S. Coast and Geodetic Survey datum; and 0.88 ft (0.268 m) above mean sea level, Geodetic Survey of Canada 1959 datum (by water level transfer of elevation from the international boundary). Prior to Sept. 24, 1940, nonrecording gage on west shore at site just uplake from Ross Dam at same datum. Sept. 24, 1940, to June 28, 1943, water-stage recorder at present site and datum. June 29, 1943, to Apr. 29, 1948, nonrecording gage on right bank at site 500 ft (152 m) uplake from dam at present datum.

REMARKS.--Reservoir is formed by concrete arch dam completed to elevation 1,615 ft (492.3 m) in 1949, storage began Mar. 11, 1940. Starting about July 1, 1957, taintor gates were extended to elevation, 1,602.50 ft (488.44 m). Usable storage, 1,052,300 acre-ft (1,300 hm³) between elevations 1,475 ft (449.6 m), lower limit of operation, and 1,602.5 ft (488.44 m), top of taintor gates. Dead storage below elevation, 1,250 ft (381 m), 1,175 acre-ft (1.45 hm³). Water used for power and to supplement low flow of Skagit River through city of Seattle's Diablo and Gorge powerplants. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by city of Seattle. This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,441,180 acre-ft (1,780 hm³) Aug. 28, 1976, elevation, 1,603.04 ft (488.607 m); minimum observed since dam was completed in 1949, 51,760 acre-ft (63.8 hm³) Apr. 5, 1952, elevation, 1,348.50 ft (411.023 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,424,900 acre-ft; (1,760 hm³) Oct. 1, elevation, 1,601.67 ft (488.189 m); minimum, 453,708 acre-ft (559 hm³) Apr. 22, elevation, 1,489.85 ft (454.106 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on 25-foot contour intervals furnished by City of Seattle in 1943)

1,475	378,000	1,525	679,000	1,575	1,150,200
1,500	509,200	1,550	888,300	1,603	1,440,700

ELEVATION, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1601.67	1598.82	1586.60	1568.99	1535.41	1521.95	1492.35	1506.72	1527.59	1561.31	1570.86	1581.00
2	1601.12	1598.60	1585.65	1568.19	1534.53	1521.50	1492.26	1508.36	1528.56	1561.72	1571.27	1581.00
3	1600.96	1598.60	1584.60	1566.88	1533.76	1521.26	1491.88	1509.98	1529.69	1561.99	1571.76	1581.27
4	1600.76	1598.01	1583.80	1565.00	1532.77	1520.68	1491.68	1511.19	1530.51	1562.26	1572.19	1581.59
5	1600.83	1597.63	1583.00	1562.62	1532.22	1520.04	1491.16	1512.08	1531.72	1562.23	1572.61	1581.88
6	1600.73	1597.51	1582.01	1560.60	1532.36	1518.90	1490.75	1512.82	1533.63	1562.26	1573.03	1582.11
7	1600.75	1597.27	1581.06	1560.18	1531.47	1517.72	1491.18	1513.62	1535.06	1562.60	1573.66	1582.35
8	1600.73	1596.92	1580.19	1559.00	1530.86	1516.80	1491.73	1513.25	1538.12	1562.56	1573.86	1582.52
9	1600.83	1596.61	1579.02	1557.80	1530.38	1515.81	1492.42	1514.01	1539.55	1562.77	1574.22	1582.50
10	1600.86	1595.90	1577.93	1556.77	1529.73	1515.71	1492.92	1514.86	1540.66	1562.93	1574.59	1582.56
11	1600.97	1595.32	1577.12	1555.56	1528.92	1515.19	1492.86	1515.63	1541.95	1563.17	1574.97	1582.72
12	1601.01	1594.69	1576.47	1554.16	1528.56	1514.21	1492.67	1516.20	1543.35	1563.62	1575.38	1582.76
13	1601.03	1594.38	1575.61	1552.87	1528.61	1512.80	1491.96	1516.06	1544.65	1563.89	1575.83	1582.67
14	1600.89	1593.88	1574.80	1551.70	1528.07	1511.20	1491.78	1517.23	1545.96	1564.25	1576.26	1582.72
15	1600.60	1593.38	1574.08	1550.56	1527.62	1510.09	1491.68	1517.55	1547.06	1564.52	1576.61	1582.73
16	1600.53	1593.03	1573.65	1549.36	1526.76	1508.61	1491.65	1518.12	1548.22	1564.81	1576.96	1582.71
17	1600.69	1593.00	1572.88	1548.29	1526.01	1507.36	1491.78	1518.67	1549.26	1565.36	1577.30	1582.81
18	1600.27	1592.81	1572.70	1549.27	1525.20	1505.88	1491.19	1519.00	1550.56	1565.70	1577.66	1582.87
19	1600.08	1592.60	1572.77	1549.02	1525.05	1504.99	1490.69	1519.30	1551.02	1565.96	1577.95	1582.86
20	1599.92	1592.21	1572.15	1548.36	1524.90	1503.78	1490.26	1519.80	1552.05	1566.19	1578.28	1582.86
21	1599.78	1592.08	1571.56	1547.31	1524.46	1502.62	1490.35	1520.63	1553.90	1566.41	1578.62	1582.93
22	1599.61	1591.60	1570.91	1546.16	1524.40	1501.10	1489.85	1521.10	1555.03	1566.72	1578.92	1582.88
23	1599.60	1591.20	1570.77	1545.07	1524.19	1500.00	1490.61	1522.15	1555.09	1567.10	1579.22	1582.88
24	1599.63	1591.10	1570.63	1544.19	1523.89	1498.95	1492.07	1523.07	1556.70	1567.47	1579.56	1583.02
25	1599.56	1591.09	1570.26	1542.95	1523.26	1498.31	1494.86	1523.76	1557.61	1567.89	1579.92	1583.00
26	1599.47	1590.81	1570.76	1541.09	1523.01	1497.02	1498.12	1524.20	1558.26	1568.16	1580.19	1583.00
27	1599.31	1590.36	1570.60	1540.77	1522.95	1497.72	1500.50	1524.74	1558.95	1568.64	1580.29	1582.83
28	1599.25	1589.84	1570.26	1539.36	1522.68	1496.30	1501.90	1525.19	1559.56	1569.20	1580.67	1582.76
29	1599.17	1588.87	1570.16	1538.23	---	1495.03	1503.08	1525.71	1560.18	1569.60	1580.83	1582.71
30	1598.98	1587.77	1569.95	1537.20	---	1493.86	1504.96	1525.93	1560.75	1570.06	1580.86	1582.69
31	1599.01	---	1569.50	1536.27	---	1492.68	---	1526.42	---	1570.44	1580.93	---
MEAN	1600.28	1593.85	1575.53	1551.45	1527.92	1508.38	1493.35	1517.99	1546.27	1565.22	1576.61	1582.50
MAX	1601.67	1598.82	1586.60	1568.99	1535.41	1521.95	1504.96	1526.42	1560.75	1570.44	1580.93	1583.08
MIN	1598.98	1587.77	1569.50	1536.27	1522.68	1492.68	1489.85	1506.72	1527.59	1561.31	1570.86	1581.00
*	1,391,816	1,266,970	1,074,659	769,474	659,744	468,568	538,904	689,952	987,800	1,083,288	1,192,658	1,209,392
‡	-30,072	-124,846	-192,311	-305,185	-109,730	-191,176	+70,336	+151,048	+297,848	+95,488	+109,370	+16,734

CAL YR 1976‡.................. -221,144
WTR YR 1977‡.................. -212,496

* Total contents, at end of month.
‡ Change in contents, in acre-feet.

12175500 THUNDER CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°40'22", long 121°04'18", in SE¼ sec.23, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi (0.6 km) upstream from high-water line of Diablo Reservoir 9.0 mi (14.5 km) east of Newhalem, and at mile 3.4 (5.5 km).

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.-- October 1930 to current year. Published as "above Colonial Creek, near Marblemount" 1930-31.

REVISED RECORDS.--WSP 1012: 1945. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-ft). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (371.9 m), from river-profile map.

REMARKS.--Records good.

AVERAGE DISCHARGE.--47 years, 618 ft³/s (17.50 m³/s) 79.93 in/yr (2,030 mm/yr), 447,800 acre-ft/yr (552 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Oct. 25, 1955, gage height, 12.68 ft (3.865 m), from rating curve extended above 3,500 ft³/s (99.1 m³/s); minimum not determined, probably less than 50 ft³/s (1.42 m³/s) during period of ice effect or no gage-height record in February 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Records for floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 2,400 ft³/s (68.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1000	*3,110	88.1	*7.74	2.359

Minimum daily discharge, 98 ft³/s (2.78 m³/s) Jan. 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	460	210	146	165	160	160	125	644	900	1010	1180	506
2	450	170	142	150	152	154	122	754	680	900	1410	676
3	430	164	136	140	148	148	121	680	538	680	1630	970
4	380	164	130	130	142	142	128	527	709	576	1690	1240
5	350	154	124	125	138	138	156	436	830	503	1640	965
6	320	142	125	120	134	136	210	379	1410	457	1550	736
7	320	142	152	114	130	158	320	367	1960	472	1480	608
8	340	150	166	110	128	186	421	391	1710	580	1440	520
9	330	168	148	107	132	192	345	427	1080	644	1410	482
10	400	170	134	104	156	190	293	482	920	596	1410	499
11	550	154	128	102	168	176	267	436	1000	776	1480	531
12	420	138	124	102	382	164	247	376	1140	890	1780	545
13	370	130	121	100	364	154	267	358	1130	749	1790	616
14	330	124	118	98	247	144	247	340	1090	781	1750	624
15	300	136	226	98	218	142	237	317	1070	895	1560	466
16	270	454	300	109	210	138	228	325	1050	980	1500	397
17	250	803	235	370	216	132	216	307	1200	1190	1530	350
18	230	460	222	2140	208	132	208	320	1450	920	1450	335
19	215	287	180	749	198	128	198	361	1520	776	1260	520
20	210	222	164	460	194	124	190	379	1320	790	1260	565
21	200	200	156	364	202	124	186	548	1190	925	1290	415
22	190	184	146	305	194	127	210	517	1240	990	1110	342
23	180	184	146	262	186	142	350	552	1090	955	1030	317
24	182	342	134	237	174	135	700	472	1040	1030	1140	300
25	208	325	138	220	170	125	1090	412	1200	1290	980	262
26	182	212	430	204	168	128	1060	433	1060	1290	740	240
27	168	176	361	192	166	142	680	385	955	1410	608	224
28	190	172	255	182	162	136	592	342	970	1620	821	218
29	176	164	222	172	---	132	620	327	965	1210	1080	216
30	154	154	196	172	---	128	616	317	985	975	652	208
31	198	---	180	168	---	127	---	469	---	1110	538	---
TOTAL	8973	6655	5585	8071	5247	4484	10650	13380	33302	27970	40189	14873
MEAN	289	222	180	260	187	145	355	432	1110	902	1296	496
MAX	550	803	430	2140	382	192	1090	754	1960	1620	1790	1240
MIN	154	124	118	98	128	124	121	307	538	457	538	208
CFSM	2.75	2.11	1.71	2.48	1.78	1.38	3.38	4.11	10.6	8.59	12.3	4.72
IN.	3.18	2.36	1.98	2.86	1.86	1.59	3.77	4.74	11.80	9.91	14.24	5.27
AC-FT	17800	13200	11080	16010	10410	8890	21120	26540	66050	55480	79710	29500

CAL YR 1976 TOTAL 220964 MEAN 604 MAX 2450 MIN 115 CFSM 5.75 IN 78.28 AC-FT 438300
WTR YR 1977 TOTAL 179379 MEAN 491 MAX 2140 MIN 98 CFSM 4.68 IN 63.55 AC-FT 355800

12177500 STETATTLE CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°43'20", long 121°08'58", in NE¼ sec.6, T.37 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on left bank 5.5 mi (8.8 km) northeast of Newhalem and at mile 0.4 (0.6 km).

DRAINAGE AREA.--22.0 mi² (57.0 km²).

PERIOD OF RECORD.--December 1913 to November 1915 (fragmentary), September 1933 to current year. Published as "near Marblemount" 1913-15.

REVISED RECORDS.--WSP 1316: 1935(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 906.53 ft (276.310 m) above mean sea level (City of Seattle datum). Dec. 19, 1913, to Nov. 14, 1915, nonrecording gage at site about 0.3 mi (0.5 km) downstream at different datum. Sept. 7, 1933, to Aug. 26, 1937, water-stage recorder at site 750 ft (229 m) upstream at datum 1.69 ft (0.515 m) higher. Aug. 27, 1937, to Nov. 20, 1957, water-stage recorder at site 600 ft (183 m) upstream at present datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--44 years (water years 1934-77), 184 ft³/s (5.211 m³/s), 113.58 in/yr (2,885 mm/yr), 133,300 acre-ft/yr (164 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,580 ft³/s (243 m³/s) Nov. 26, 1949, gage height, 9.70 ft (2.957 m), from rating curve extended above 1,600 ft³/s (45.3 m³/s) on basis of slope-area measurement of peak flow; minimum, 9 ft³/s (0.255 m³/s) Nov. 9-11, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 970 ft³/s (27.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0700	*1,850	52.4	*4.07	1.241

Minimum discharge, 31 ft³/s (0.878 m³/s) Oct. 24, Jan. 14, 15, gage height, 0.79 ft (0.241 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	163	59	76	43	65	54	256	390	165	158	79
2	126	102	56	67	42	60	52	305	242	147	168	143
3	107	98	51	61	40	56	55	253	190	122	180	180
4	97	93	48	53	40	52	78	182	330	107	177	207
5	97	79	45	49	39	50	122	134	342	97	163	136
6	93	66	45	46	37	53	190	113	476	90	154	104
7	88	61	81	45	37	76	291	124	536	95	147	85
8	85	62	158	41	37	139	313	156	400	116	143	71
9	84	68	139	39	45	128	198	190	256	124	143	65
10	104	63	109	36	105	115	152	195	242	113	139	65
11	140	56	120	35	115	87	126	158	277	147	145	65
12	115	49	105	34	476	78	111	124	302	198	158	65
13	98	44	93	33	309	68	132	122	288	139	161	68
14	84	40	79	31	177	61	115	115	270	126	154	65
15	73	55	201	32	139	56	104	104	256	134	139	56
16	64	334	219	38	134	52	98	105	249	190	132	51
17	59	400	228	362	141	49	87	102	284	274	132	48
18	53	198	187	1220	134	47	79	124	313	163	128	47
19	48	130	139	350	120	47	72	154	305	128	122	70
20	43	98	113	201	109	46	67	163	246	124	126	168
21	38	84	95	149	107	52	66	267	228	136	124	109
22	35	72	82	118	113	62	109	207	302	141	105	79
23	33	71	78	95	105	95	256	219	213	136	113	90
24	40	149	68	81	87	82	470	172	207	141	170	84
25	93	158	70	70	78	72	506	147	228	161	198	66
26	65	104	405	63	72	74	400	165	192	168	143	58
27	59	82	302	56	68	82	253	128	170	175	113	52
28	95	72	182	52	67	72	242	111	163	219	267	47
29	76	66	141	48	---	66	246	105	152	185	190	46
30	58	62	113	46	---	63	249	97	158	141	116	47
31	192	---	93	45	---	59	---	267	---	145	90	---
TOTAL	2558	3179	3904	3672	3016	2164	5293	5064	8207	4547	4598	2516
MEAN	82.5	106	126	118	108	69.8	176	163	274	147	148	83.9
MAX	192	400	405	1220	476	139	506	305	536	274	267	207
MIN	33	40	45	31	37	46	52	97	152	90	90	46
CFSM	3.75	4.82	5.73	5.36	4.91	3.17	8.00	7.41	12.5	6.68	6.73	3.81
IN.	4.33	5.38	6.60	6.21	5.10	3.66	8.95	8.56	13.88	7.69	7.77	4.25
AC-FT	5070	6310	7740	7280	5980	4290	10500	10040	16280	9020	9120	4990

CAL YR 1976 TOTAL 71073 MEAN 194 MAX 636 MIN 33 CFSM 8.82 IN 120.18 AC-FT 141000
WTR YR 1977 TOTAL 48718 MEAN 133 MAX 1220 MIN 31 CFSM 6.05 IN 82.37 AC-FT 96630

12178000 SKAGIT RIVER AT NEWHALEM, WA

LOCATION.--Lat 48°40'19", long 121°14'48", in SW¼SE¼ sec. 21, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi (0.6 km) upstream from Newhalem Creek, 0.5 mi (0.8 km) downstream from city of Seattle powerplant at Newhalem, 10.8 mi (17.4 km) upstream from Bacon Creek, and at mile 93.7 (150.8 km).

DRAINAGE AREA.--1,175 mi² (3,043 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1908 to May 1914 and October 1920 to current year in reports of Geological Survey. June 1914 to September 1920 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31.

REVISED RECORDS.--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401.5 ft (122.38 m) above mean sea level (river-profile survey). Prior to May 24, 1914, nonrecording gages at site 0.5 mi (0.8 km) upstream at datum 91 ft (127.7 m) higher. Nov. 15, 1920 to June 4, 1923, nonrecording gage at site about 500 ft (152 m) upstream at same datum.

REMARKS.--Water-discharge records excellent. Water is diverted 2.9 mi (4.7 km) above station and is returned to river at Seattle powerplant 0.5 mi (0.8 km) above station. Flow regulated for power at Gorge Dam since August 1924 and by Diablo, Ross, and Gorge Reservoirs (see sta 12175000, 12176500, and 12177700), having a combined total capacity of 1,533,000 acre-ft (1,890 hm³).

AVERAGE DISCHARGE.--69 years (water years 1909-77), 4,487 ft³/s (127 m³/s) 3,251,000 acre-ft/yr (4,010 hm³/yr), adjusted for storage in Diablo Reservoir since October 1929, Ross Reservoir since March 1940, and Gorge Reservoir since June 1960.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,500 ft³/s (1,800 m³/s) Nov. 29, 1909, gage height, 22.0 ft (6.71 m) from floodmark, site and datum then in use; minimum, 54 ft³/s (1.53 m³/s) Nov. 1, 1943, gage height, 78.15 ft (23.820 m); minimum daily, 136 ft³/s (3.85 m³/s) Aug. 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1815 reached a stage of approximately 20.5 ft (6.25 m), discharge about 115,000 ft³/s (3,260 m³/s). Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,500 ft³/s (694 m³/s) Jan. 5, gage height, 89.65 ft (27.325 m); minimum, 963 ft³/s (27.3 m³/s) Oct. 31, gage height, 80.69 ft (24.594 m); minimum, daily, 1,030 ft³/s (29.2 m³/s) Oct. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3130	3120	6790	3670	4850	3130	2710	2370	2130	1720	1720	1450
2	3750	2550	6810	6160	4440	3810	2310	2380	2130	1740	1740	1460
3	4440	3280	6790	7140	4640	2700	2300	2370	2140	1740	1740	1440
4	3430	3040	6630	8810	4330	3050	2460	2360	2120	1740	1730	1460
5	1100	3200	6670	15300	3310	4970	2650	2330	2130	1740	1740	1440
6	1310	2820	6110	8570	3090	5590	3360	2330	2140	1740	1730	1440
7	1720	2410	6690	6200	4420	6460	2340	2330	3530	1730	1730	1440
8	2540	2740	6690	6290	3690	6720	2680	2340	2550	1740	1720	1450
9	1850	3680	5920	5320	3080	6020	2970	2330	2130	1740	1710	1460
10	1640	4010	6830	5850	4660	3360	2540	2330	2120	1730	1710	1440
11	1440	4920	6860	5330	5000	2720	3720	2330	2130	1740	1720	1420
12	2070	4540	5910	5630	4680	5660	3570	2320	2130	1740	1730	1420
13	2600	3500	6030	5320	4040	6440	3850	2320	2110	1740	1870	1430
14	3170	2160	5320	5500	5380	6880	4260	2320	2110	1730	2090	1420
15	2520	5130	4640	6300	5130	5360	3740	2320	2110	1730	2680	1410
16	1770	4310	5170	6020	5040	6170	2300	3420	2140	1740	2280	1420
17	2080	4590	5430	6710	5430	5580	2340	2330	2140	1740	1780	1420
18	2070	4050	2560	7840	4370	5470	3560	2330	1780	1720	1760	1420
19	2410	4290	2360	7280	2730	4080	3860	2170	1850	1720	1800	1430
20	1620	3430	5150	7190	3260	4750	3350	2130	2010	1730	1750	1430
21	2020	2260	4410	7190	3610	6650	2320	2160	1750	1720	1730	1420
22	2310	3310	3740	7160	3330	4760	2340	2130	1740	1720	1720	1410
23	1560	3340	2470	7210	3270	4500	2360	2140	1730	1720	1750	1410
24	1030	3580	3060	7210	2450	5000	2340	2130	1730	1720	1760	1420
25	1130	2640	3100	7210	2580	3270	2340	2110	1720	1720	1760	1410
26	1420	3170	2670	7210	2790	3160	2340	2120	1730	1720	1650	1410
27	1650	4200	3860	7190	2980	2860	2360	2120	1730	1710	1420	1400
28	1660	4230	4000	7190	3250	4730	2350	2120	1720	1720	1430	1410
29	1830	6730	2950	7190	---	5430	2360	2120	1720	1720	1430	1420
30	2310	6780	2530	6110	---	4380	2360	2120	1720	1720	1430	1410
31	1400	---	3540	5820	---	4250	---	2140	---	1710	1440	---
TOTAL	64980	112010	151090	213120	109830	148730	84340	70870	60920	53590	54250	42820
MEAN	2096	3734	4900	6875	3923	4798	2811	2286	2031	1729	1750	1427
MAX	4440	6780	6860	15300	5430	6880	4260	3420	3530	1740	2680	1460
MIN	1030	2160	2360	3670	2450	2700	2300	2110	1720	1710	1420	1400
AC-FT	128900	222200	301300	422700	217800	295000	167300	140600	120800	106300	107600	84930
†	-28,600	-126,200	-195,100	-306,500	-106,700	-190,700	+68,800	+151,700	+294,400	+99,040	+108,600	+16,410
MEAN‡	1,631	1,614	1,727	1,889	2,001	1,696	3,969	4,753	6,980	3,338	3,515	1,703
AC-FT‡	100,300	96,000	106,200	116,200	111,100	104,300	236,100	292,300	415,200	205,300	216,200	101,300

CAL YR 1976: TOTAL 2,006,420 MEAN 5,482 MAX 14,900 MIN 1,030 AC-FT 3,980,000
DO.....: MEAN‡ 5,169 AC-FT‡ 3,754,000
WTR YR 1977: TOTAL 1,167,350 MEAN 3,198 MAX 15,300 MIN 1,030 AC-FT 2,315,000
DO.....: MEAN‡ 2,900 AC-FT‡ 2,100,000

† Change in contents, in acre-feet, Ross, Diablo and Gorge Reservoir.
‡ Adjusted for change in reservoir contents.

12178000 SKAGIT RIVER AT NEWHALEM, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken at foot bridge 350 ft (106.7 km) upstream from gaging station.

PERIOD OF RECORD.--Water years 1974, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
12...	1115	2160	49	7.5	10.1	4	2	11.6	.02	.02	.01	.00
26...	1200	1340	53	7.4	9.4	50	1	12.0	.02	.04	.01	.00
NOV												
09...	1120	3110	56	7.3	9.5	4	1	11.6	.02	.02	.00	.00
17...	1130	5450	59	7.4	9.5	17	3	11.8	.07	.05	.01	.00
DEC												
07...	1135	6690	65	7.5	8.3	13	1	12.0	.05	.06	.00	.00
21...	1025	4220	67	7.4	7.2	8	1	12.3	.05	.04	.01	.00
JAN												
12...	1330	5090	61	7.3	5.3	4	6	11.7	.06	.06	.01	.00
25...	1040	7210	72	7.2	5.0	4	4	12.7	.06	.04	.01	.00
FEB												
02...	1040	6800	85	7.3	5.0	8	4	12.7	.06	.02	.01	.00
22...	1140	4400	72	7.3	5.0	8	3	12.5	.05	.02	.00	.00
MAR												
15...	1115	5030	73	7.5	5.0	4	1	12.9	.06	.03	.01	.00
30...	1145	5120	75	7.6	5.1	9	1	12.9	.07	.00	.00	.00
APR												
12...	1035	4880	75	7.3	6.5	4	3	13.0	.06	.03	.00	.00
26...	1300	2350	55	7.2	7.0	8	3	12.0	.07	.04	.00	.00
MAY												
10...	1200	2330	65	7.2	8.0	8	5	12.3	.09	.02	.00	.00
24...	1020	2130	60	7.5	8.6	8	3	12.5	.10	.02	.00	.00
JUN												
14...	1145	2080	44	7.4	12.1	17	4	11.7	.07	.04	.00	.00
28...	1110	1720	86	7.0	12.0	13	4	12.2	.09	.05	.01	.00
JUL												
06...	1120	1740	35	6.8	11.4	8	5	12.2	.07	.04	.01	.00
19...	1250	1710	40	7.3	12.9	4	3	11.8	.06	.06	.01	.00
AUG												
02...	1155	1740	35	7.4	14.5	0	10	11.6	.06	.05	.02	.00
16...	1120	2020	26	6.9	13.8	8	12	11.4	.04	.06	.03	.00
SEP												
07...	1230	1470	36	--	12.0	17	7	12.1	.04	.04	.01	.00
20...	1200	1420	37	7.0	10.2	13	3	12.1	.05	.03	.00	.00

12178100 NEWHALEM CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°39'22", long 121°14'14", in SE¼SE¼ sec.28, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, North Cascades National Park, on left bank 1.2 mi (1.9 km) south of Newhalem, 1.5 mi (2.4 km) downstream from East Fork, and at mile 1.5 (2.4 km).

DRAINAGE AREA.--27.9 mi² (72.3 km²).

PERIOD OF RECORD.--January 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,080 ft (329.2 m), by barometer.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--16 years, 177 ft³/s (5.013 m³/s), 86.15 in/yr (2,188 mm/yr), 128,200 acre-ft/yr (158 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,600 ft³/s (159 m³/s) about Nov. 20, 1962, gage height, 7.28 ft (2.219 m) from floodmarks, from rating curve extended above 750 ft³/s (21.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 20 ft³/s (0.57 m³/s) Feb. 1, 1963, gage height, 1.07 ft (0.326 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 750 ft³/s (21.2 m³/s) and maximum (*) from peak-stage indicator, from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 17	1300	942	26.7	4.41	1.344	Aug. 28	2100	958	27.1	4.43	1.350
Jan. 18	1445	*2,920	82.7	*6.08	1.853						

Minimum discharge, 24 ft³/s (0.680 m³/s) Oct. 24, gage height, 1.14 ft (0.347 m) result of slide upstream temporarily blocking the stream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	93	56	69	48	59	47	224	346	145	98	72
2	90	71	53	63	46	56	45	280	261	140	104	103
3	84	69	49	59	43	53	46	242	197	113	111	124
4	73	63	46	54	43	51	56	168	286	105	112	161
5	69	60	43	52	41	49	79	131	316	95	120	114
6	64	55	41	50	40	51	126	110	469	88	126	90
7	62	54	72	48	39	65	199	106	550	84	109	76
8	63	54	103	47	39	78	220	117	414	95	106	67
9	62	55	91	45	44	72	156	140	276	101	102	61
10	87	54	72	44	88	63	124	164	253	90	99	58
11	111	50	68	42	91	59	106	144	275	125	98	56
12	82	47	64	41	337	58	94	115	299	139	103	54
13	76	44	62	40	163	55	106	105	288	109	103	54
14	68	43	56	38	113	51	95	109	274	101	100	52
15	62	57	147	37	95	50	88	100	266	104	96	49
16	58	222	143	42	102	47	85	105	288	123	91	46
17	54	329	136	141	110	44	76	98	301	165	89	44
18	50	163	138	1540	104	43	71	102	325	118	86	41
19	48	107	103	485	94	41	65	115	306	100	80	55
20	46	83	89	235	91	41	61	122	245	95	78	108
21	44	75	78	165	88	44	59	253	211	98	78	93
22	43	67	72	131	85	53	72	190	246	102	73	71
23	36	64	70	106	76	75	156	194	227	99	84	77
24	40	129	63	93	69	66	311	165	192	97	118	83
25	84	173	64	82	64	60	400	141	214	104	154	70
26	68	98	315	72	62	58	358	148	182	106	112	61
27	60	77	248	63	61	62	234	125	158	108	86	55
28	72	69	143	57	63	56	200	109	157	147	218	51
29	67	64	109	54	---	53	209	99	147	123	203	50
30	56	60	93	52	---	51	208	93	142	95	109	51
31	86	---	79	51	---	49	---	179	---	93	85	---
TOTAL	2052	2649	2966	4098	2339	1713	4152	4493	8111	3407	3331	2147
MEAN	66.2	88.3	95.7	132	83.5	55.3	138	145	270	110	107	71.6
MAX	111	329	315	1540	337	78	400	280	550	165	218	161
MIN	36	43	41	37	39	41	45	93	142	84	73	41
CFSM	2.37	3.17	3.43	4.73	2.99	1.98	4.95	5.20	9.68	3.94	3.84	2.57
IN.	2.74	3.53	3.95	5.46	3.12	2.28	5.54	5.99	10.81	4.54	4.44	2.86
AC-FT	4070	5250	5880	8130	4640	3400	8240	8910	16090	6760	6610	4260

CAL YR 1976	TOTAL	62442	MEAN	171	MAX	663	MIN	34	CFSM	6.13	IN	83.26	AC-FT	123900
WTR YR 1977	TOTAL	41458	MEAN	114	MAX	1540	MIN	36	CFSM	4.09	IN	55.28	AC-FT	82230

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'27", long 121°21'37", in SW¼NE¼ sec.15, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.6 mi (1.0 km) upstream from Alma Creek, 6.8 mi (10.9 km) northeast of Marblemount, and at mile 85.8 (138.1 km).

DRAINAGE AREA.--1,274 mi² (3,300 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 358.8 ft (109.4 m) above mean sea level (river-profile survey).

REMARKS.--Water discharge records excellent except those for period of no gage-height record, May 25 to July 7, which are good. All diversions returned to river above gage. Flow regulated for powerplants on upper Skagit River by Ross, Diablo, and Gorge Reservoirs (see stations 12175000, 12176500, 12177700).

AVERAGE DISCHARGE.--27 years, 5,618 ft³/s (159.1 m³/s), 4,070,000 acre-ft/yr (5,020 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s (1,090 m³/s) June 21, 1967, gage height, 17.36 ft (5.291 m); minimum, 990 ft³/s (28.0 m³/s) Dec. 29, 1957, gage height, 4.55 ft (1.387 m); minimum daily, 1,180 ft³/s (33.4 m³/s) Oct. 24, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,300 ft³/s (660 m³/s) Jan. 5, gage height, 13.59 ft (4.142 m); minimum, 1,150 ft³/s (32.6 m³/s) Oct. 24, gage height, 5.01 ft (1.527 m); minimum daily, 1,180 ft³/s (33.4 m³/s) Oct. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3510	3580	7070	4210	5220	3510	3320	3410	4300	2500	2200	1800
2	4150	2910	7070	6430	4680	4050	2670	3640	3600	2400	2250	1920
3	4860	3690	7050	7470	4950	3210	2620	3510	3300	2300	2300	2130
4	3890	3320	7060	8770	4710	3210	2790	3190	3900	2250	2300	2200
5	1410	3510	7000	14400	3590	5240	3090	3020	4200	2200	2300	2000
6	1590	3070	6620	10300	3370	5810	3990	2910	4800	2150	2400	1880
7	1860	2720	7040	6400	4640	6800	3390	2870	5700	2100	2300	1820
8	2790	2900	7220	6700	3900	7230	3760	2930	4400	2160	2200	1780
9	2260	4030	7270	5500	3360	6600	3770	3000	3400	2200	2180	1760
10	2030	4200	7250	7000	4830	4140	3320	3120	3300	2150	2180	1740
11	1880	5120	7330	6800	5480	3220	4330	3050	3500	2250	2190	1710
12	2340	4800	6390	7100	6230	5800	4160	2900	3600	2440	2240	1700
13	2890	3700	6630	6900	5190	7160	4370	2860	3500	2290	2350	1710
14	3450	2380	5650	7000	5950	7220	4930	2860	3400	2220	2580	1680
15	2830	5260	5660	6400	5720	7390	4300	2830	3300	2230	3180	1660
16	2000	5110	5840	6000	5560	6700	2840	3940	3400	2350	2740	1640
17	2260	5820	6150	9000	5960	5920	2790	2830	3550	2710	2230	1630
18	2270	4690	3440	13000	5100	5790	3930	2830	3400	2360	2180	1620
19	2660	4900	2930	8860	3360	5270	4240	2740	3300	2240	2190	1720
20	1820	3890	5620	8140	3660	5000	3820	2700	3100	2210	2160	2020
21	2230	2670	4920	7910	4230	6930	2700	3110	2800	2210	2130	1900
22	2470	3590	4330	7760	3870	5350	2770	2920	3100	2220	2080	1760
23	1720	3620	2890	7720	3790	4940	3170	2970	2800	2210	2120	1790
24	1180	4090	3370	7660	2870	5580	3910	2870	2750	2220	2340	1810
25	1430	3320	3570	7590	2990	3770	4300	2700	2800	2270	2530	1740
26	1620	3580	4110	7550	3160	3620	4860	2800	2700	2270	2270	1700
27	1850	4430	5120	7520	3400	3340	3470	2650	2600	2290	1900	1670
28	1960	4540	4840	7480	3620	4980	3330	2600	2500	2400	2240	1650
29	2060	6960	3750	7450	---	5750	3340	2550	2480	2300	2330	1640
30	2600	7010	3190	6510	---	4900	3310	2500	2450	2200	1950	1630
31	1910	---	3560	6170	---	4450	---	3400	---	2150	1850	---
TOTAL	73780	123410	169960	237700	123410	162880	106790	92210	101930	70450	70390	53410
MEAN	2380	4114	5482	7668	4408	5254	3560	2975	3398	2273	2271	1780
MAX	4860	7010	7330	14400	6230	7390	4930	3940	5700	2710	3180	2200
MIN	1180	2380	2890	4210	2870	3210	2620	2500	2450	2100	1850	1620
AC-FT	146300	244800	337100	471500	244800	323100	211800	182900	202200	139700	139600	105900

CAL YR 1976 TOTAL 2299090 MEAN 6282 MAX 16200 MIN 1180 AC-FT 4560000
WTR YR 1977 TOTAL 1386300 MEAN 3798 MAX 14400 MIN 1180 AC-FT 2750000

12179000 SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1953 -1973, 1974 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: January 1953 to September 1973, September 1974 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 15.0°C Aug. 3-5, 9, 12, 13, 20, 1977; minimum, 1.0°C Jan. 26, 27, 29-31, Feb. 1-3, 1972.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 3-5, 9, 12, 13, 20; minimum, 3.5°C Feb. 25.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.0	10.0	10.5	9.0	8.0	8.5	8.0	7.0	8.0	5.5	5.0	5.5
2	10.5	10.0	10.0	8.5	8.0	8.0	8.0	7.0	8.0	5.5	5.5	5.5
3	10.5	9.5	10.0	9.0	8.5	8.5	8.0	7.0	8.0	6.0	5.5	5.5
4	10.5	9.5	10.0	9.0	8.0	8.5	8.0	8.0	8.0	6.0	5.0	5.5
5	10.0	9.5	10.0	9.0	8.5	8.5	8.0	7.0	8.0	5.5	5.0	5.5
6	11.0	9.5	10.0	9.0	8.5	9.0	8.0	8.0	8.0	5.5	5.0	5.5
7	11.0	9.5	10.0	9.0	8.5	9.0	8.0	8.0	8.0	5.5	5.0	5.5
8	11.0	9.5	10.0	9.5	8.5	9.0	8.0	7.0	8.0	5.5	5.0	5.5
9	10.5	9.5	10.0	9.5	8.5	9.0	8.0	7.0	7.0	5.0	4.5	5.0
10	10.0	9.5	10.0	9.5	8.5	9.0	8.0	7.0	7.0	5.0	4.5	5.0
11	10.5	9.5	10.0	9.5	8.5	9.0	8.5	8.0	8.0	5.0	4.5	5.0
12	10.0	9.5	9.5	9.0	8.5	8.5	8.0	7.0	7.0	5.0	4.5	5.0
13	10.5	9.5	10.0	9.0	8.0	8.5	8.0	7.0	7.0	5.5	4.5	5.0
14	10.0	9.5	9.5	8.5	8.0	8.5	8.0	6.5	7.0	5.5	5.0	5.0
15	10.0	9.0	9.5	9.0	8.5	8.5	7.0	6.5	7.0	5.5	5.0	5.0
16	10.0	8.5	9.0	9.0	8.5	8.5	7.0	6.5	7.0	5.5	5.0	5.0
17	10.0	9.0	9.5	9.0	8.0	8.5	7.0	6.5	7.0	5.5	5.0	5.5
18	9.5	8.5	9.0	8.5	7.0	8.0	6.5	6.0	6.5	5.5	4.5	5.0
19	9.5	8.5	9.0	8.5	7.0	8.0	6.5	5.5	6.0	5.5	4.5	5.0
20	9.5	8.5	9.0	8.5	8.0	8.0	6.5	6.0	6.5	5.5	5.0	5.0
21	9.5	8.0	9.0	8.0	8.0	8.0	7.0	6.5	6.5	5.5	5.0	5.0
22	9.0	7.0	8.5	8.5	8.0	8.0	7.0	6.5	6.5	5.0	4.5	4.5
23	9.0	8.0	8.5	8.5	8.0	8.0	6.5	6.0	6.5	5.0	4.5	4.5
24	9.0	8.5	8.5	8.5	8.0	8.0	6.5	6.0	6.0	5.0	4.5	4.5
25	9.0	8.5	8.5	8.0	6.5	7.0	6.5	6.0	6.5	5.0	4.5	4.5
26	9.0	8.5	8.5	7.0	6.0	6.5	6.5	5.5	6.0	5.0	4.5	4.5
27	9.0	8.0	8.5	7.0	6.0	6.5	6.0	5.5	5.5	4.5	4.0	4.5
28	9.0	8.5	9.0	7.0	6.5	7.0	6.0	5.0	5.5	4.5	4.0	4.5
29	9.0	8.0	8.5	8.0	7.0	7.0	6.0	5.0	5.5	4.5	4.0	4.0
30	9.0	7.0	8.5	8.0	7.0	8.0	6.0	5.0	5.5	4.5	4.0	4.5
31	8.5	8.0	8.5	---	---	---	5.5	4.5	5.0	5.0	4.5	4.5
MONTH	11.0	7.0	9.5	9.5	6.0	8.0	8.5	4.5	7.0	6.0	4.0	5.0

12179000 SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.5	4.0	4.5	4.5	4.0	4.0	5.5	4.5	5.0	8.5	6.5	7.5
2	5.0	4.0	4.5	4.5	4.0	4.0	5.5	4.5	5.0	7.5	6.5	7.0
3	5.0	4.0	4.5	4.5	4.0	4.0	6.5	5.0	5.5	7.0	6.5	7.0
4	5.0	4.0	4.5	4.5	4.0	4.0	6.5	5.0	5.5	7.5	6.0	6.5
5	5.0	4.5	4.5	4.5	4.0	4.5	6.5	5.0	5.5	7.5	6.5	7.0
6	5.0	4.5	4.5	4.5	4.0	4.5	7.0	5.0	5.5	8.5	6.5	7.5
7	5.0	4.5	4.5	4.5	4.0	4.0	7.5	5.5	6.0	9.0	6.5	7.5
8	5.0	4.5	4.5	4.0	4.0	4.0	5.5	5.5	5.5	9.5	7.0	8.0
9	5.0	4.5	4.5	4.0	4.0	4.0	6.0	5.0	5.5	9.5	7.0	8.0
10	4.5	4.5	4.5	5.0	4.0	4.0	5.5	5.0	5.5	7.5	7.0	7.5
11	4.5	4.5	4.5	4.5	4.0	4.0	6.0	5.0	5.5	8.0	7.0	7.5
12	4.5	4.5	4.5	4.5	4.0	4.0	6.0	5.0	5.5	9.0	7.0	7.5
13	4.5	4.0	4.5	4.5	4.0	4.0	6.0	5.5	5.5	8.0	7.0	7.5
14	5.0	4.0	4.5	4.5	4.0	4.0	6.0	5.0	5.5	8.5	7.0	8.0
15	5.0	4.5	4.5	4.0	4.0	4.0	6.0	5.0	5.5	9.0	7.5	8.0
16	5.0	4.5	4.5	4.5	4.0	4.0	6.5	5.5	5.5	8.5	7.5	8.0
17	4.5	4.5	4.5	4.5	4.0	4.5	6.5	5.5	5.5	8.0	7.5	8.0
18	5.0	4.5	4.5	4.5	4.0	4.0	6.0	5.0	5.5	9.5	7.5	8.0
19	5.0	4.5	4.5	5.0	4.0	4.5	6.5	5.0	5.5	9.0	8.0	8.0
20	5.0	4.5	5.0	4.5	4.0	4.5	6.5	5.0	6.0	9.0	8.0	8.5
21	5.0	4.5	4.5	4.5	4.0	4.5	7.0	5.5	6.0	9.0	8.0	8.0
22	4.5	4.5	4.5	5.0	4.5	4.5	8.0	6.0	6.5	10.0	7.5	8.5
23	5.0	4.0	4.5	5.0	4.5	4.5	8.0	6.0	7.0	8.0	7.5	8.0
24	4.5	4.0	4.0	4.5	4.5	4.5	8.5	6.0	7.0	9.0	7.5	8.0
25	4.0	3.5	4.0	5.0	4.5	4.5	8.0	6.0	6.5	10.0	7.0	8.5
26	4.5	4.0	4.0	4.5	4.5	4.5	7.0	6.0	6.5	9.5	8.0	8.5
27	4.5	4.0	4.0	5.0	4.0	4.5	8.0	6.0	7.0	9.0	7.5	8.0
28	4.5	4.0	4.0	5.0	4.5	4.5	8.5	6.0	7.0	10.0	8.0	8.5
29	---	---	---	5.0	4.5	4.5	8.5	6.5	7.0	9.5	8.0	8.5
30	---	---	---	5.5	4.5	4.5	9.0	6.5	7.5	9.5	8.0	8.5
31	---	---	---	5.0	4.5	4.5	---	---	---	8.5	8.0	8.5
MONTH	5.0	3.5	4.5	5.5	4.0	4.5	9.0	4.5	6.0	10.0	6.0	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.5	7.5	8.0	12.0	10.5	11.0	14.5	11.5	12.5	13.0	10.5	11.5
2	9.5	7.0	8.0	11.5	10.5	11.0	14.5	11.5	13.0	11.5	11.0	11.0
3	8.5	7.5	8.0	11.5	10.5	11.0	15.0	12.0	13.0	12.5	10.5	11.5
4	8.5	8.0	8.0	12.5	10.5	11.0	15.0	12.0	13.0	12.5	11.0	11.5
5	10.5	7.5	9.0	12.5	10.5	11.0	15.0	12.0	13.0	13.0	11.0	11.5
6	11.0	8.5	9.5	11.5	10.5	11.0	14.5	12.0	13.0	13.0	10.5	11.5
7	11.0	8.5	9.5	13.0	10.0	11.5	14.5	12.0	13.0	12.0	10.5	11.0
8	10.0	8.5	9.0	13.0	10.5	11.5	14.5	12.0	13.0	12.5	10.5	11.5
9	10.5	8.0	9.0	11.0	10.5	10.5	15.0	12.0	13.0	13.0	10.5	11.0
10	11.5	8.0	9.5	12.0	10.5	11.0	14.5	12.0	13.0	13.0	10.5	11.5
11	11.5	8.5	10.0	11.0	10.5	10.5	14.5	12.0	13.0	13.0	10.5	11.5
12	11.5	9.0	10.0	11.0	10.0	10.5	15.0	12.0	13.0	13.0	10.5	11.5
13	12.0	9.0	10.0	12.0	10.0	11.0	15.0	12.0	13.0	13.0	10.5	11.5
14	12.0	9.0	10.0	12.5	10.5	11.0	14.5	12.0	13.0	12.0	10.5	11.0
15	11.5	9.5	10.5	13.5	10.5	11.5	14.5	12.0	13.0	11.5	10.5	11.0
16	12.5	9.5	10.5	12.0	11.0	11.0	14.5	12.0	13.0	11.5	10.5	11.0
17	12.5	9.5	11.0	12.5	10.5	11.0	14.5	12.0	13.0	11.5	10.5	11.0
18	12.5	9.5	11.0	13.0	10.0	11.0	14.0	12.0	12.5	11.0	10.5	10.5
19	12.5	9.5	10.5	13.5	10.5	11.5	14.5	12.0	13.0	11.0	10.5	10.5
20	11.0	10.0	10.5	13.5	10.5	11.5	15.0	12.0	13.0	10.5	10.0	10.0
21	11.0	10.0	10.5	13.5	11.0	12.0	13.0	12.0	12.5	11.0	9.5	10.0
22	12.5	10.0	10.5	14.0	11.0	12.0	14.0	12.0	12.5	11.5	9.5	10.5
23	12.5	9.5	11.0	14.0	11.0	12.0	13.0	12.0	12.5	10.0	10.0	10.0
24	11.5	10.0	10.5	13.5	11.0	12.0	12.5	11.5	12.0	10.0	9.5	10.0
25	12.5	10.0	11.0	13.5	11.0	12.0	11.5	11.0	11.5	10.5	9.5	10.0
26	11.5	10.0	10.5	14.0	11.5	12.5	12.0	11.0	11.5	11.0	9.5	10.0
27	12.5	10.0	11.0	14.0	11.5	12.5	12.0	11.0	11.5	11.5	9.5	10.0
28	13.0	10.0	11.0	12.5	11.5	12.0	11.5	11.0	11.0	10.5	10.0	10.0
29	13.0	10.5	11.5	12.0	11.0	11.5	12.0	10.5	11.0	10.5	10.0	10.0
30	13.5	10.5	11.5	14.0	11.0	12.0	13.0	10.5	11.5	10.5	10.0	10.0
31	---	---	---	14.0	11.0	12.5	13.0	10.5	11.5	---	---	---
MONTH	13.5	7.0	10.0	14.0	10.0	11.5	15.0	10.5	12.5	13.0	9.5	11.0
YEAR	15.0	3.5	8.0									

12179800 SKAGIT RIVER ABOVE BACON CREEK NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'10", long 121°23'11", in SE¼SW¼ sec.21, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.1 mi (0.2 km) upstream from Bacon Creek, 5.9 mi (9.5 km) northeast of Marblemount, and at mile 83.0 (133.5 km).

DRAINAGE AREA.--1,289 mi² (3,339 km²) of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--April to September 1977.

GAGE.--Water-stage recorder. Altitude of gage is 350 ft (107 m), from topographic map.

REMARKS.--Records good. All diversions returned to river above gage. Flow regulated by powerplants on upper Skagit River by Ross (sta 12175000), Diablo (sta 12176500), and Gorge (sta 12177700) Reservoirs.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period April to September, 8,020 ft³/s (227 m³/s) June 7, gage height, 6.01 ft (1.832 m); minimum daily, 1,620 ft³/s (45.9 m³/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	3600	4170	2420	2240	1810
2							---	3870	3510	2380	2290	1940
3							---	3700	3190	2290	2330	2160
4							---	3320	3720	2240	2330	2240
5							---	3120	3810	2180	2330	2000
6							---	3000	4490	2150	2360	1850
7							---	2970	5980	2110	2250	1820
8							---	3030	4790	2170	2210	1800
9							---	3120	3460	2220	2180	1760
10							---	3260	3340	2150	2170	1740
11							---	3160	3470	2280	2180	1710
12							---	2990	3570	2520	2240	1700
13							---	2940	3500	2320	2350	1710
14							---	2960	3420	2240	2610	1680
15							---	2910	3360	2250	3190	1660
16							---	3960	3420	2390	2730	1640
17							---	2920	3560	2850	2230	1630
18							---	2910	3370	2420	2170	1620
19							---	2820	3340	2270	2170	1720
20							---	2790	3230	2220	2140	2040
21							---	3270	2760	2220	2110	1900
22							---	3060	3000	2230	2050	1760
23							---	3110	2740	2230	2100	1790
24							---	3000	2680	2230	2340	1810
25							---	2870	2790	2280	2640	1740
26							---	2920	2630	2280	2310	1700
27							3570	2810	2490	2300	1890	1670
28							3490	2720	2450	2460	2330	1650
29							3510	2660	2430	2400	2470	1640
30							3470	2630	2390	2200	1950	1630
31							---	3220	---	2200	1830	---
TOTAL							---	95620	101080	71100	70740	53520
MEAN							---	3085	3369	2294	2282	1784
MAX							---	3960	5980	2850	3190	2240
MIN							---	2630	2390	2110	1830	1620
AC-FT							---	189700	200500	141000	140300	106200

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°32'02", long 121°25'43", in NE¼SW¼ sec.7, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on right bank 0.5 mi (0.8 km) north of Marblemount and 0.6 mi (1.0 km) upstream from Cascade River, and at mile 78.7 (126.6 km).

DRAINAGE AREA.--1,381 mi² (3,577 km²) approximately, of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--September 1943 to July 1944, October 1946 to September 1951, May 1976 to current year.

REVISED RECORDS.--WDR WA-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 305.1 ft (8.640 m) above mean sea level (river-profile survey).

REMARKS.--Records good. No diversion above station. Flow regulated by powerplants on upper Skagit River, and by Ross and Diablo Reservoirs.

AVERAGE DISCHARGE.--6 years (water years 1947-51, 1977) 6,216 ft³/s (176.0 m³/s) 4,504,000 ac-ft/yr (5,550 hm³/yr), unadjusted for regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,300 ft³/s (1,680 m³/s) Nov. 27, 1949, gage height, 11.37 ft (3.466 m), from rating curve extended above 20,000 ft³/s (566 m³/s); minimum, 620 ft³/s (17.6 m³/s) Mar. 6, 1944, gage height, 0.55 ft (0.168 m); minimum daily, 1,190 ft³/s (33.7 m³/s) Feb. 25, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,600 ft³/s (753 m³/s) Jan. 5, gage height, 7.52 ft (2.292 m); minimum, 1,500 ft³/s (42.5 m³/s) Oct. 24, gage height, 1.63 ft (0.497 m); minimum daily, 1,570 ft³/s (44.5 m³/s) Oct. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3820	4170	7380	6730	5590	3950	3070	4500	5590	3120	2770	2160
2	4360	3330	7360	6790	5060	4230	3060	4980	4510	3030	2840	2330
3	5090	3880	7330	8000	5140	3750	2970	4710	3920	2920	2900	2820
4	4260	3560	7320	9090	5160	3370	3160	4050	4830	2860	2920	2850
5	1910	3750	7270	15400	3840	5470	3610	3690	4930	2750	2960	2560
6	1930	3280	6850	11900	3620	6120	4730	3490	5920	2710	3030	2320
7	2080	2980	7570	7020	4880	7390	4620	3460	7590	2630	2860	2200
8	3120	3060	8210	7400	4160	8080	4970	3570	5980	2710	2790	2120
9	2650	4030	8200	5930	3610	7440	4640	3720	4340	2790	2750	2050
10	2570	4070	7820	7660	5080	4940	4840	3970	4230	2690	2730	2020
11	2420	4850	7990	7540	6140	3800	4930	3790	4400	2860	2730	1980
12	2710	4580	7010	7730	7450	6130	4710	3490	4490	3210	2790	1960
13	3300	3550	7200	7600	6380	7740	5000	3400	4400	2940	2900	1960
14	3780	2410	6300	7730	6600	7770	5480	3440	4290	2820	3140	1940
15	3250	4910	6500	7150	6320	8000	4890	3370	4200	2820	3710	1900
16	2400	5830	6580	6470	6090	7160	3420	4460	4260	2990	3280	1860
17	2570	7280	7140	10200	6550	6330	3260	3340	4460	3710	2770	1830
18	2610	5490	4450	16000	5880	6150	4260	3330	4340	3120	2710	1810
19	2970	5390	3530	10900	3950	5640	4620	3300	4260	2880	2690	1950
20	2120	4370	6000	9600	3980	5260	4220	3280	4040	2790	2650	2640
21	2460	3130	5480	9080	4750	7350	3110	4030	3560	2790	2630	2530
22	2730	3810	4740	8750	4490	5940	3290	3690	3890	2790	2550	2170
23	2060	3810	3410	8600	4260	5490	4200	3780	3560	2770	2610	2240
24	1570	4490	3670	8450	3320	6160	5670	3600	3490	2790	3070	2300
25	2000	4240	4050	8320	3380	4200	6320	3390	3590	2840	3560	2120
26	2000	3910	6070	8230	3510	4080	5740	3510	3390	2860	3100	2020
27	2280	4620	6600	8150	3770	3820	4560	3310	3210	2880	2550	1950
28	2350	4830	5860	8070	3960	5340	4330	3160	3140	3070	3160	1910
29	2480	7230	4710	8010	---	6100	4370	3080	3120	2990	3490	1930
30	2900	7310	3880	7010	---	5410	4290	3030	3070	2750	2490	1890
31	2670	---	3870	6660	---	4700	---	4160	---	2730	2270	---
TOTAL	85420	132200	190350	266170	136920	177310	130340	114080	129000	89610	89400	64320
MEAN	2755	4407	6140	8586	4890	5720	4345	3680	4300	2891	2884	2144
MAX	5090	7310	8210	16000	7450	8080	6320	4980	7590	3710	3710	2850
MIN	1570	2410	3410	5930	3320	3370	2970	3030	3070	2630	2270	1810
AC-FT	169400	262200	377600	527900	271600	351700	258500	226300	255900	177700	177300	127600

WTR YR 1977 TOTAL 1605120 MEAN 4398 MAX 16000 MIN 1570 AC-FT 3184000

12181100 SOUTH FORK CASCADE RIVER AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'13", long 121°04'25", Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank at outlet of South Cascade Lake, 10.2 mi (16.4 km) upstream from confluence with North Fork, 21 mi (33.8 km) southeast of Marblemount, and at mile 28.9 (46.5 km).

DRAINAGE AREA.--2.36 mi^2 (6.11 km^2).

PERIOD OF RECORD.--July 1957 to September 1961 (seasonal records only; published as "near Marblemount"). October 1961 to current year. Prior to October 1960, monthly discharge only published in WSP 1736; dailies on file in Tacoma district office.

GAGE.--Water-stage recorder. Datum of gage is 5,290.61 ft (1,612.578 m) above mean sea level (from U.S. Coast and Geodetic Survey triangulation point). Prior to Sept. 23, 1960, at datum 0.47 ft (0.143 m) lower. Sept. 23, 1960, to Aug. 10, 1964, at datum 1.34 ft (0.408 m) lower.

REMARKS.--Records good. No regulation or diversion above station. Flow originates at South Cascade Glacier.

AVERAGE DISCHARGE.--16 years (water years 1962-77), 25.7 ft^3/s (0.728 m^3/s), 147.89 in/yr (3,756 mm/yr), 18,591 acre-ft/yr (22.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 194 ft^3/s (5.49 m^3/s) Oct. 24, 1959; minimum discharge recorded, 0.6 ft^3/s (0.017 m^3/s) probably sometime Mar. 21-31, 1964, gage height, 0.16 ft (0.049 m), from recorded range in stage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 119 ft^3/s (3.37 m^3/s) Aug. 5, gage height, 2.85 ft (0.869 m); minimum daily, 3.2 ft^3/s (0.091 m^3/s) Mar. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	17	8.8	4.9	6.6	4.8	5.1	20	32	71	82	66
2	52	13	8.4	4.7	6.2	4.5	5.1	26	26	66	87	50
3	46	12	8.0	4.6	5.9	4.2	5.0	21	21	55	95	70
4	36	12	7.6	4.5	5.7	3.9	4.0	16	25	68	99	81
5	32	10	7.1	4.3	5.5	3.6	3.3	12	35	63	105	80
6	31	9.2	7.0	4.1	5.2	3.5	3.6	9.9	58	36	107	69
7	33	8.8	7.4	3.9	4.8	4.2	5.4	9.2	69	33	90	50
8	35	9.6	7.8	3.9	4.7	5.5	9.1	9.9	69	37	92	52
9	33	11	8.2	3.9	4.9	7.0	8.7	12	73	40	99	46
10	40	12	7.3	3.9	5.8	11	7.2	16	71	37	91	45
11	47	11	6.6	3.9	6.3	7.0	6.2	15	64	48	92	46
12	42	9.6	6.0	3.9	11	5.4	5.6	12	66	48	100	40
13	41	8.4	5.8	3.9	18	4.6	5.7	10	72	57	104	50
14	37	7.5	5.4	3.9	13	4.1	5.3	9.3	67	56	105	52
15	31	8.3	9.7	3.9	9.8	4.0	4.8	8.9	63	63	105	45
16	27	24	21	4.0	8.6	4.0	4.4	9.6	63	70	103	39
17	23	50	15	9.5	8.3	3.6	4.5	9.3	69	83	102	35
18	20	37	13	88	7.5	3.7	4.4	8.8	76	78	90	36
19	18	25	9.7	44	6.5	4.1	4.4	8.7	81	69	92	45
20	17	19	8.3	20	6.3	3.9	4.4	9.6	81	66	88	46
21	16	15	7.9	13	6.2	3.8	3.7	15	75	66	85	37
22	15	15	7.2	11	6.6	3.6	3.6	17	80	67	79	31
23	14	14	7.5	10	6.5	3.4	9.1	20	78	69	75	20
24	13	19	6.8	9.2	5.7	3.3	26	17	75	73	85	24
25	14	19	6.7	8.6	5.5	3.2	38	14	86	80	83	20
26	13	14	11	7.9	5.8	3.4	31	13	80	83	72	18
27	11	12	11	7.4	5.8	5.9	18	12	76	88	62	16
28	13	11	8.3	7.0	5.3	5.4	16	11	73	96	64	16
29	13	9.9	6.8	6.9	---	5.1	17	10	73	92	66	17
30	11	9.2	5.9	6.6	---	5.1	18	9.4	71	70	64	16
31	14	---	5.3	6.5	---	5.1	---	14	---	70	52	---
TOTAL	845	452.5	262.5	321.8	198.0	143.9	286.6	405.4	1948	1987	2742	1261
MEAN	27.3	15.1	8.47	10.4	7.07	4.64	9.55	13.1	64.9	64.1	88.5	42.0
MAX	57	50	21	88	18	11	38	26	86	96	107	81
MIN	11	7.5	5.3	3.9	4.7	3.2	3.3	8.7	21	33	52	16
CFSM	11.6	6.40	3.59	4.41	3.00	1.97	4.05	5.55	27.5	27.2	37.5	17.8
IN.	13.31	7.13	4.14	5.07	3.12	2.27	4.52	6.39	30.69	31.31	43.20	19.87
AC-FT	1680	898	521	638	393	285	568	804	3860	3940	5440	2500

CAL YR 1976 TOTAL 10615.2 MEAN 29.0 MAX 96 MIN 1.8 CFSM 12.3 IN 167.25 AC-FT 21060
WTR YR 1977 TOTAL 10853.7 MEAN 29.7 MAX 107 MIN 3.2 CFSM 12.6 IN 171.01 AC-FT 21530

12181200 SALIX CREEK AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'16", long 121°04'55", in SE¼ sec.2, T.33 N., R.13 E.(unsurveyed), Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank 900 ft (274 m) west of South Cascade Lake, 0.5 mi (0.8 km) upstream from mouth, and 21 mi (33.8 km) southeast of Marblemount.

DRAINAGE AREA.--0.078 mi² (0.202 km²).

PERIOD OF RECORD.--June to November 1961, May 1962 to January 1964 (fragmentary), May 1964 to November 1965, March 1966 to October 1973, July 1974 to October 1975, May 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,200 ft (1,585 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--10 years (water years 1963, 1967-73, 1975, 1977), 0.58 ft³/s (0.0164 m³/s), 103.15 in/yr (2,620 mm/yr), 431 acre-ft/yr (0.531 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 29 ft³/s (0.82 m³/s) Feb. 3, 1963, gage height, 3.43 ft (1.045 m), from rating curve extended above 8 ft³/s (0.23 m³/s); minimum, 0.02 ft³/s (0.001 m³/s) between Aug. 24, and 29, 1961, Aug. 29, 30, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12.1 ft³/s (0.34 m³/s) Aug. 5, gage height, 1.79 ft (0.546 m); minimum, 0.03 ft³/s (0.001 m³/s) part or all of each day Mar. 26 to Apr. 4 and Aug. 16-22, gage height, 0.17 ft (0.052 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.48	.17	.12	.13	.11	.03	1.8	2.1	.20	.10	.19
2	.16	.30	.17	.12	.13	.11	.03	2.3	1.1	.30	.07	.51
3	.14	.23	.16	.11	.12	.10	.03	1.3	1.0	.23	.07	.56
4	.12	.16	.16	.10	.12	.10	.08	.76	2.5	.39	.05	.87
5	.13	.12	.16	.09	.11	.09	.16	.56	3.2	.40	.37	.32
6	.11	.09	.13	.09	.11	.09	.39	.66	4.7	.27	.19	.16
7	.09	.11	.14	.08	.11	.09	.94	.87	4.1	.19	.11	.19
8	.08	.15	.11	.08	.11	.08	1.0	.94	2.7	.16	.09	.13
9	.09	.09	.14	.08	.12	.08	.48	1.3	2.1	.14	.06	.11
10	.37	.08	.13	.08	.12	.08	.31	1.1	2.2	.13	.07	.10
11	.37	.07	.12	.08	.12	.08	.25	.69	2.1	.27	.08	.15
12	.19	.06	.11	.08	1.5	.08	.25	.50	2.1	.25	.07	.06
13	.13	.06	.11	.07	.64	.07	.26	.52	2.0	.22	.23	.09
14	.11	.07	.10	.07	.37	.07	.22	.43	1.7	.17	.23	.09
15	.10	.14	1.3	.33	.31	.06	.19	.42	1.6	.16	.19	.09
16	.09	1.6	1.2	.14	.31	.06	.16	.37	1.6	.19	.03	.09
17	.08	2.8	.66	2.6	.30	.06	.16	.32	1.3	.33	.03	.09
18	.08	.41	.33	6.9	.25	.06	.13	.48	1.2	.19	.03	.08
19	.07	.22	.26	1.0	.23	.06	.12	.64	.88	.15	.03	.10
20	.07	.19	.22	.48	.23	.06	.11	1.0	.78	.12	.03	.61
21	.07	.22	.19	.35	.23	.06	.12	2.1	.69	.11	.03	.78
22	.07	.16	.17	.30	.22	.06	.53	1.5	.55	.10	.03	1.3
23	.07	.25	.16	.25	.19	.06	2.1	1.1	.44	.10	.17	.37
24	.10	.87	.14	.23	.16	.06	4.6	.61	.45	.09	.54	.43
25	.17	.48	.23	.20	.14	.06	3.8	.59	.38	.09	.88	.32
26	.25	.41	1.8	.19	.13	.06	1.7	.92	.32	.09	.61	.26
27	.22	.59	.30	.17	.12	.03	.96	.62	.29	.09	.37	.17
28	.35	.22	.20	.16	.12	.03	1.5	.66	.27	.20	.78	.17
29	.23	.17	.17	.16	---	.03	1.7	.43	.23	.19	.61	.37
30	.13	.17	.16	.16	---	.03	1.8	.58	.21	.12	.43	.37
31	.64	---	.13	.13	---	.03	---	2.5	---	.09	.26	---
TOTAL	4.95	10.12	8.49	14.76	6.75	2.10	24.07	28.17	43.99	5.76	6.76	9.13
MEAN	.16	.34	.27	.48	.24	.068	.80	.91	1.47	.19	.22	.30
MAX	.64	2.8	1.3	6.9	1.5	.11	4.6	2.5	4.7	.40	.88	1.3
MIN	.07	.06	.10	.07	.11	.03	.03	.32	.21	.09	.03	.08
CFSM	2.00	4.25	3.38	6.00	3.00	.85	10.0	11.4	18.4	2.38	2.75	3.75
IN.	2.27	4.65	3.90	6.78	3.10	.96	11.05	12.96	20.28	2.66	3.10	4.19
AC-FT	9.8	20	17	29	13	4.2	48	56	87	11	13	18

WTR YR 1977 TOTAL 165.04 MEAN .45 MAX 6.9 MIN .03 CFSM 5.63 IN 75.81 AC-FT 327

12182500 CASCADE RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°31'37", long 121°24'50", in NW¼NW¼ sec.17, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on left bank at Fish Hatchery Road bridge 0.5 mi (0.8 km) upstream from Jordan Creek, 0.7 mi (1.1 km) east of Marblemount, and at mile 0.9 (1.4 km).

DRAINAGE AREA.--172 mi^2 (445 km^2).

PERIOD OF RECORD.--September 1928 to current year. Water temperatures May 1952 to November 1963, September 1964, October 1965 to September 1973.

REVISED RECORDS.--WSP 832: 1936. WSP 1932: Drainage area (at site then in use).

GAGE.--Water-stage recorder. Altitude of gage is 330 ft (101 m) above mean sea level (from topographic map). Prior to July 1, 1976, water-stage recorder at site 2 mi (3.2 km) upstream at different datum.

REMARKS.--Records good except those for periods Jan. 21-Mar. 2 and Apr. 6-13, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--49 years, 1,034 ft^3/s (29.28 m^3/s) 81.64 in/yr (2,074 mm/yr) 749,100 acre-ft/yr (924 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,700 ft^3/s (530 m^3/s) Nov. 20, 1962, from rating curve extended above 5,600 ft^3/s (159 m^3/s); maximum gage height, 11.47 ft (3.496 m) Nov. 27, 1949 at site and datum then in use; minimum discharge, 118 ft^3/s (3.34 m^3/s) Nov. 30, 1952; minimum gage height, 1.11 ft (0.338 m) Feb. 8, 1937 at site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of approximately 22 ft (6.7 m), at site and datum then in use, discharge, 46,000 ft^3/s (1,300 m^3/s). Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 3,600 ft^3/s (102 m^3/s) and maximum(*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1300	*8,460	240	*16.32	4.974	June 7	2100	3,600	102	13.08	3.986

Minimum discharge, 200 ft^3/s (5.66 m^3/s) Nov. 14, gage height, 12.21 ft (3.734 m); minimum gage height, 12.07 ft (3.679 m) Feb. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	726	477	290	528	301	478	397	1290	1640	1160	970	665
2	600	370	730	477	282	438	385	1400	1290	1110	1920	662
3	657	365	285	650	343	404	369	1360	1060	962	1110	685
4	561	330	297	608	325	383	428	1080	1370	852	1140	1120
5	613	301	290	302	310	363	566	896	1580	785	1150	977
6	483	276	278	365	293	363	763	795	2440	721	1250	805
7	477	250	380	332	280	440	1100	763	2490	688	1090	796
8	567	258	488	311	274	568	1330	783	2420	734	1030	639
9	495	265	471	290	280	802	1040	841	1890	802	993	584
10	609	269	605	276	308	572	867	866	1580	734	993	566
11	860	251	280	264	518	530	788	817	1670	830	983	678
12	627	233	370	290	491	568	726	776	1910	967	1080	578
13	561	216	365	270	696	684	788	730	1800	850	1100	586
14	567	224	340	273	646	636	717	726	1730	820	1100	682
15	656	260	513	276	548	616	670	670	1620	857	1060	525
16	615	763	763	382	518	300	665	711	1670	932	1070	657
17	370	1250	616	695	596	376	620	650	1870	1160	1010	635
18	340	633	683	5080	626	376	580	652	2010	977	977	381
19	315	561	563	1890	602	376	566	685	1950	852	910	548
20	301	671	600	1260	584	363	530	717	1620	823	873	755
21	267	626	460	1040	546	376	512	682	1640	852	866	736
22	260	365	426	800	572	410	588	652	1610	887	809	602
23	256	375	433	760	572	518	862	1020	1650	887	802	578
24	251	639	383	663	518	684	1060	912	1390	810	805	626
25	355	840	486	688	476	604	2290	815	1500	903	1010	956
26	325	567	1210	560	470	476	1960	861	1330	1010	926	698
27	287	495	1360	520	470	512	1330	776	1190	1040	765	648
28	320	421	916	470	488	476	1180	786	1220	1230	880	613
29	335	365	760	443	---	440	1230	658	1140	1210	1350	502
30	278	370	695	420	---	420	1210	626	1090	932	687	498
31	375	---	589	400	---	416	---	920	---	917	721	---
TOTAL	13788	13111	16253	22070	13632	13861	27001	26719	49080	28417	30928	18608
MEAN	445	437	524	712	487	446	900	862	1636	917	998	620
MAX	860	1250	1360	5080	696	684	2290	1490	2490	1230	1350	1120
MIN	251	216	269	264	274	363	369	626	1060	684	721	381
CFSM	2.59	2.54	3.05	4.14	2.83	2.59	5.24	5.01	9.51	5.33	5.80	3.61
IN.	2.98	2.84	3.52	4.77	2.95	2.99	5.85	5.78	10.61	6.15	6.69	4.02
AC-FT	27350	26010	32240	43780	27040	27490	53560	53000	97350	56370	61350	36910

CAL YR 1976 TOTAL 392505 MEAN 1072 MAX 6860 MIN 204 CFSM 6.23 IN 84.89 AC-FT 778500
WTR YR 1977 TOTAL 273503 MEAN 749 MAX 5080 MIN 204 CFSM 4.36 IN 59.15 AC-FT 542500

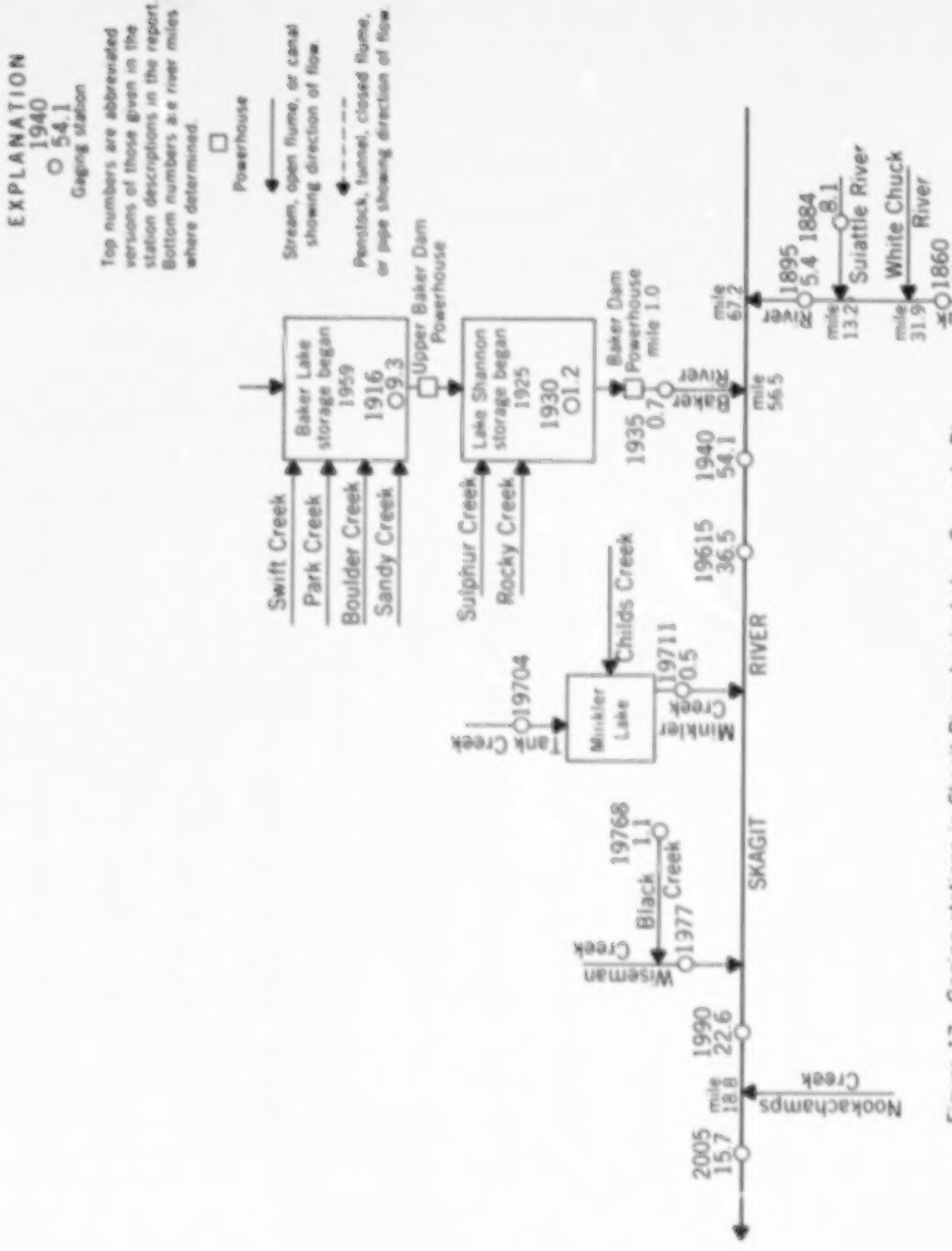
EXPLANATION
1940
54.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow
Penstock, tunnel, closed flume, or pipe showing direction of flow
Swift Creek
Park Creek
Boulder Creek
Sandy Creek
Baker Lake storage began 1959
1916
9.3
Upper Baker Dam Powerhouse
Sulphur Creek
Rocky Creek
Lake Shannon storage began 1925
1930
1.2
Baker Dam Powerhouse mile 1.0
1935
0.7
Baker River
mile 56.5
1940
54.1
19615
36.5
Childs Creek
Tank Creek
19704
Minkler Lake
19711
0.5
Minkler Creek
RIVER
19768
1.1
Black Creek
1377
Wiseman Creek
SKAGIT
1990
22.6
mile 18.8
Nookachamps Creek
2005
15.7
mile 67.2
River
1895
5.4
1884
8.1
Suiattle River
mile 13.2
White Chuck River
mile 31.9
1860
32.5
Sauk

Figure 17. Gaging stations in Skagit River basin below Cascade River.

12186000 SAUK RIVER ABOVE WHITE CHUCK RIVER NEAR DARRINGTON, WA

LOCATION.--Lat 48°10'08", long 121°28'10", on north line NE¼NE¼ sec.23, T.31 N., R.10 E., Snohomish County, Hydrologic Unit 17110006, Mount Baker National Forest, on right bank 0.6 mi (1.0 km) upstream from White Chuck River, 8.4 mi (13.5 km) southeast of Darrington and at mile 32.5 (52.3 m).

DRAINAGE AREA.--152 mi² (394 km²).

PERIOD OF RECORD.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to current year.

REVISED RECORDS.--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (283 m), from river-profile map. Prior to Nov. 18, 1910, nonrecording gage 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Records good except those for period of no gage-height record, Mar. 21-Apr. 25, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years (water years 1918-22, 1929-77), 1,149 ft³/s (32.54 m³/s), 102.65 in/yr (2,607 mm/yr), 832,500 acre-ft/yr (1,030 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft³/s (855 m³/s) Nov. 27, 1949, gage height, 14.90 ft (4.542 m), from rating curve extended above 15,000 ft³/s (425 m³/s); minimum, 115 ft³/s (3.26 m³/s) Nov. 15, 16, 30, Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*8,610	244	*7.97	2.429

Minimum discharge, 213 ft³/s (6.03 m³/s) Oct. 23, 24, gage height, 2.76 ft (0.841 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	468	909	410	599	385	594	420	1660	1850	768	528	692
2	450	583	386	538	365	534	400	1750	1420	768	544	608
3	528	482	363	499	345	497	380	2020	1220	671	575	907
4	439	424	342	457	332	461	410	1660	1980	615	578	1080
5	385	383	324	411	318	433	550	1330	1980	580	554	864
6	360	348	315	392	305	433	850	1120	2760	536	527	671
7	341	323	410	374	293	744	1250	1060	3070	499	500	573
8	332	313	701	349	285	1010	1600	1030	2200	526	491	515
9	327	335	752	331	297	988	1200	1080	1730	566	474	455
10	385	318	569	317	594	792	940	1260	1550	525	472	416
11	541	302	536	311	800	650	780	1160	1540	538	469	395
12	473	284	502	371	1360	594	700	997	1580	594	490	385
13	406	268	487	331	1440	521	760	934	1590	543	500	380
14	370	256	462	324	898	467	700	943	1580	508	484	370
15	336	340	782	345	728	438	640	898	1450	539	464	336
16	304	832	1100	441	664	416	640	898	1420	563	448	314
17	284	1660	862	1450	760	385	590	800	1530	629	438	293
18	268	1330	943	6080	768	370	550	784	1670	565	433	281
19	253	836	738	2670	678	370	520	792	1600	489	406	355
20	243	651	635	1580	636	355	490	824	1370	463	388	713
21	233	565	569	1170	664	330	480	1300	1140	478	381	898
22	226	528	523	952	760	420	570	1240	1280	487	353	629
23	216	467	539	800	692	580	1000	1330	1100	486	334	587
24	216	527	478	699	601	540	1800	1180	1050	488	454	692
25	341	1070	519	622	560	510	2760	1030	1110	532	929	615
26	395	730	2140	560	528	500	2550	1110	970	539	767	521
27	327	580	2100	515	650	730	2520	979	898	532	611	455
28	318	516	1250	473	657	560	1860	898	840	605	763	433
29	340	473	956	438	---	510	1650	792	768	744	2570	467
30	295	439	796	411	---	470	1670	752	752	562	1440	449
31	630	---	684	400	---	450	---	1080	---	522	907	---
TOTAL	11030	17072	22173	25210	17363	16652	31230	34691	44998	17458	19272	16349
MEAN	356	569	715	813	620	537	1041	1119	1500	563	622	545
MAX	630	1660	2140	6080	1440	1010	2760	2020	3070	768	2570	1080
MIN	216	256	315	311	285	330	380	752	752	463	334	281
CFSM	2.34	3.74	4.70	5.35	4.08	3.53	6.85	7.36	9.87	3.70	4.09	3.59
IN.	2.70	4.18	5.43	6.17	4.25	4.08	7.64	8.49	11.01	4.27	4.72	4.00
AC-FT	21880	33860	43980	50000	34440	33030	61940	68810	89250	34630	38230	32430

CAL YR 1976 TOTAL 417637 MEAN 1141 MAX 3620 MIN 216 CFSM 7.51 IN 102.21 AC-FT 828400
WTR YR 1977 TOTAL 273498 MEAN 749 MAX 6080 MIN 216 CFSM 4.93 IN 66.93 AC-FT 542500

12188400 SUIATTLE RIVER ABOVE BIG CREEK NEAR DARRINGTON, WA

LOCATION.--Lat 48°20'52", long 121°27'08", in SW¼SE¼ sec.13, T.33 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on right bank 0.3 mi (0.5 km) upstream from Big Creek, 1.5 mi (2.4 km) downstream from Tenas Creek, 9.5 mi (15.3 km) northeast of Darrington, and at mile 8.1 (13.0 km).

DRAINAGE AREA.--307 mi² (795 km²).

PERIOD OF RECORD.--December 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records good except those for period July to September, which are poor.

AVERAGE DISCHARGE.--6 years, 1,862 ft³/s (52.73 m³/s) 82.36 in/yr (2.092 mm/yr), 1,349,000 acre-ft/yr (1,660 hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,700 ft³/s (841 m³/s) Dec. 4, 1975, gage height, 12.88 ft (3.926 m); minimum daily, 400 ft³/s (11.3 m³/s) Jan. 4, 5, Feb. 5, 1972.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*8,770	248	*8.77	2.673

Minimum discharge, 460 ft³/s (13.0 m³/s) Nov. 14, gage height, 2.80 ft (0.853 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1140	860	628	804	706	745	685	2370	2310	1950	1330	1500
2	1080	652	610	766	688	710	669	2750	1850	1970	1310	1400
3	1070	610	574	742	664	696	659	2470	1610	1760	1410	1700
4	916	580	545	688	652	670	724	2050	2110	1630	1470	2000
5	853	545	530	634	634	654	917	1810	2420	1520	1510	1800
6	839	530	535	628	616	664	1220	1630	3720	1290	1470	1600
7	797	510	700	610	604	820	1700	1540	4780	1120	1430	1450
8	797	515	804	586	598	967	2070	1490	4180	1180	1440	1400
9	797	540	778	568	616	1000	1600	1530	2940	1270	1340	1350
10	909	520	670	540	811	986	1340	1730	2700	1160	1340	1300
11	1230	505	658	540	853	918	1220	1600	2790	1320	1350	1300
12	965	492	646	580	1070	873	1130	1400	2940	1430	1490	1280
13	888	476	640	540	1230	805	1230	1340	2980	1280	1580	1300
14	825	464	622	535	902	762	1100	1320	2910	1260	1660	1280
15	760	540	860	545	825	741	1050	1250	2790	1330	1760	1220
16	712	797	1080	598	804	715	1040	1270	2720	1390	1670	1150
17	670	1540	874	1430	864	686	961	1180	2970	1480	1600	1050
18	634	1110	916	5340	879	680	925	1180	3220	1340	1550	1000
19	610	825	772	2530	826	668	862	1230	3240	1210	1500	1200
20	592	712	724	1780	812	648	833	1260	2830	1170	1450	1670
21	568	694	700	1460	852	657	823	1650	2440	1230	1400	1610
22	556	682	676	1260	847	688	962	1580	2590	1300	1350	1330
23	535	646	700	1120	807	826	1440	1750	2460	1300	1300	1320
24	530	867	640	1040	753	763	2480	1550	2340	1310	1400	1460
25	652	1240	712	965	748	725	3350	1410	2500	1400	1650	1300
26	628	832	1850	909	741	732	3210	1460	2270	1430	1850	1180
27	545	718	1780	853	764	869	2360	1330	2060	1480	1650	1090
28	556	700	1280	804	787	788	2160	1240	2040	1670	1600	1050
29	586	676	1090	766	---	744	2250	1180	2020	1710	2300	1270
30	530	658	979	748	---	723	2230	1140	1920	1360	1850	1220
31	640	---	881	730	---	713	---	1490	---	1280	1650	---
TOTAL	23410	21036	25454	31649	21953	23636	43180	48180	80650	43530	47660	40780
MEAN	755	701	821	1021	784	762	1439	1554	2688	1404	1537	1359
MAX	1230	1540	1850	5340	1230	1000	3350	2750	4780	1970	2300	2000
MIN	530	464	530	535	598	648	659	1140	1610	1120	1300	1000
CFSM	2.46	2.28	2.67	3.33	2.55	2.48	4.69	5.06	8.76	4.57	5.01	4.43
IN.	2.84	2.55	3.08	3.83	2.66	2.86	5.23	5.84	9.77	5.27	5.78	4.94
AC-FT	46430	41720	50490	62780	43540	46880	85650	95570	160000	86340	94530	80890

CAL YR 1976 TOTAL 671103 MEAN 1834 MAX 6280 MIN 464 CFSM 5.97 IN 81.32 AC-FT 1331000
WTR YR 1977 TOTAL 451118 MEAN 1236 MAX 5340 MIN 464 CFSM 4.03 IN 54.66 AC-FT 894800

12189498 SAUK RIVER NEAR ROCKPORT, WA

LOCATION.--Lat 48°24'24", long 121°33'27", in SW¼NE¼ sec.30, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, at highway bridge, 1.5 mi (2.4 km) upstream from gage and 5.7 mi (9.2 km) south of Rockport.

PERIOD OF RECORD.--October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)
OCT												
12...	1020	2060	51	7.5	9.6	21	8	11.4	19	0	5.7	1.1
25...	1100	1820	58	7.4	8.3	55	2	11.8	21	5	6.1	1.3
NOV												
09...	1030	1270	72	7.2	8.5	8	2	11.3	24	1	7.1	1.5
17...	1040	3420	49	7.2	9.0	33	10	11.5	15	0	4.7	.9
DEC												
07...	1045	1580	70	7.6	4.8	13	2	13.0	25	0	7.3	1.6
21...	0930	1810	64	7.4	4.2	38	2	13.2	22	0	6.3	1.5
JAN												
12...	1230	1710	75	7.6	2.7	13	5	13.0	25	0	7.5	1.4
25...	0940	2430	65	7.3	2.1	8	2	13.8	21	0	6.6	1.2
FEB												
02...	0935	1670	80	7.4	3.9	8	2	12.8	25	2	7.5	1.5
22...	1045	2680	59	7.1	5.4	17	3	11.9	20	1	6.2	1.2
MAR												
15...	0930	2100	76	7.5	3.8	8	1	12.8	25	3	7.4	1.5
30...	1030	2240	70	7.6	5.7	13	4	12.9	24	1	7.1	1.5
APR												
12...	0940	3140	60	7.2	6.1	13	4	12.6	22	3	6.5	1.5
26...	1215	9660	36	7.0	6.8	21	15	12.1	13	1	4.1	.6
MAY												
10...	1100	4440	54	7.0	8.1	17	2	11.6	19	1	5.6	1.1
24...	0930	4400	46	7.4	7.1	13	2	12.2	18	3	5.9	.8
JUN												
14...	1045	6730	35	7.2	11.0	21	5	11.2	14	3	4.3	.7
28...	1005	4250	40	6.9	11.5	46	8	11.4	17	6	5.5	.8
JUL												
06...	1030	2700	50	7.0	10.1	8	3	11.9	18	1	5.4	1.0
19...	1120	2640	46	7.4	12.2	13	15	11.3	18	1	5.4	1.0
AUG												
02...	1050	2900	45	7.4	15.6	33	85	10.1	16	0	4.9	.8
16...	1010	2520	45	7.2	14.3	33	100	10.6	15	1	4.4	1.0
SEP												
07...	1110	2460	58	8.7	11.4	25	20	11.4	19	2	5.8	1.2
20...	1100	2230	55	7.3	10.3	29	15	11.0	19	2	6.0	1.0

12189498 SAUK RIVER NEAR ROCKPORT, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)
OCT											
12...	1.5	.8	23	0	19	1.2	3.5	.9	.01	.04	.04
26...	1.6	.7	20	0	16	1.3	5.2	1.2	.03	.04	.02
NOV											
09...	1.9	.8	28	0	23	2.8	4.6	1.0	.01	.02	.01
17...	1.1	.6	20	0	16	2.0	2.8	.8	.12	.08	.03
DEC											
07...	2.1	.8	30	0	25	1.2	3.4	1.1	.10	.05	.01
21...	1.7	.7	27	0	22	1.7	4.9	1.2	.16	.06	.01
JAN											
12...	1.9	.7	32	0	26	1.3	4.8	1.1	.14	.05	.01
25...	1.8	.7	28	0	23	2.2	3.2	.8	.19	.06	.01
FEB											
02...	1.8	.7	28	0	23	1.8	4.0	1.2	.20	.02	.01
22...	1.5	.6	23	0	19	2.9	5.7	.8	.12	.02	.01
MAR											
15...	1.9	1.0	26	0	21	1.3	4.6	1.4	.87.	.16	.04
30...	1.6	.7	28	0	23	1.1	4.2	1.2	.18	.02	.01
APR											
12...	1.4	.7	24	0	20	2.4	3.6	1.1	.13	.03	.01
26...	.9	.5	14	0	11	2.2	5.4	.6	.10	.03	.08
MAY											
10...	1.4	.6	21	0	17	3.4	2.5	.5	.06	.02	.01
24...	1.3	.6	18	0	15	1.1	5.7	.6	.18	.05	.01
JUN											
14...	1.1	.5	13	0	11	1.3	2.6	.5	.02	.04	.01
28...	1.0	.6	14	0	11	2.8	4.6	.7	.03	.04	.02
JUL											
06...	1.4	.7	20	0	16	3.2	3.9	.6	.02	.13	.01
19...	1.4	.6	20	0	16	1.3	2.4	.5	.01	.05	.02
AUG											
02...	1.3	.8	19	0	16	1.2	4.0	.8	.06	.27	.32
16...	1.3	.7	17	0	14	1.7	3.3	.5	.04	.23	.43
SEP											
07...	1.5	.7	21	0	17	.1	2.7	.9	.06	.06	.08
20...	1.6	.8	21	0	17	1.7	3.2	1.0	.04	.06	.06

DATE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT											
12...	.00	--	--	--	0	2	6	.0	--	--	10
26...	.00	--	--	--	0	0	4	.0	--	--	10
NOV											
09...	.00	--	--	--	0	1	9	.0	--	--	10
17...	.00	--	--	--	0	2	46	.0	--	--	10
DEC											
07...	.00	--	--	--	0	3	23	.1	--	--	10
21...	.00	--	--	--	0	3	35	.1	--	--	10
JAN											
12...	.00	--	--	--	0	1	41	.1	--	--	0
25...	.00	--	--	--	10	4	23	.6	--	--	0
FEB											
02...	.00	--	--	--	0	4	18	.1	--	--	10
22...	.00	--	--	--	0	0	5	.1	--	--	10
MAR											
15...	.00	--	--	--	0	8	33	.0	--	--	20
30...	.00	--	--	--	0	0	17	.0	--	--	0
APR											
12...	.00	--	--	--	0	0	4	.0	--	--	10
26...	.00	--	--	--	0	3	30	.0	--	--	9
MAY											
10...	.00	--	--	--	0	1	6	.0	--	--	0
24...	.00	--	--	--	0	2	21	.0	--	--	0
JUN											
14...	.00	--	--	--	0	1	9	.0	--	--	6
28...	.00	--	--	--	0	2	17	.0	--	--	0
JUL											
06...	.00	--	--	--	0	1	5	.1	--	--	0
19...	.00	--	--	--	0	0	9	.0	--	--	0
AUG											
02...	.01	--	--	--	0	0	4	.0	--	--	6
16...	.00	--	--	--	0	1	7	.1	--	--	4
SEP											
07...	.01	--	--	--	0	0	6	.1	--	--	0
20...	.00	1	0	0	0	0	0	.0	0	0	0

12189500 SAUK RIVER NEAR SAUK, WA

LOCATION.--Lat 48°25'29", long 121°34'02", in NW¼NW¼ sec.19, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on left bank, 4.4 mi (7.1 km) southeast of Rockport, 7.6 mi (12.2 km) southeast of Sauk, 7.8 mi (12.6 km) downstream from Suiattle River, and at mile 5.4 (8.7 km).

DRAINAGE AREA.--714 mi² (1,849 km²).

PERIOD OF RECORD.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to current year. Published as "near Suiattle Crossing, near Sauk" 1910-12. Water temperatures March 1970 to April 1971.

REVISED RECORDS.--WSP 1286: 1929, 1937, 1939.

GAGE.--Water-stage recorder. Datum of gage is 266 ft (81.1 m) above mean sea level (from river-profile survey). Prior to Aug. 4, 1912, nonrecording gages at several sites 1 mi (1.6 km) downstream to 5 mi (8.0 km) upstream from present site at various datums. July 24, 1928, to Sept. 16, 1929, nonrecording gage at present site and datum.

REMARKS.--Records good. No regulation. Small diversion for millpond at Darrington and for domestic use.

AVERAGE DISCHARGE.--49 years (water years 1929-77), 4,399 ft³/s (124.6 m³/s) 83.67 in/yr (2,125 mm/yr), 3,187,000 acre-ft/yr (3,930 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,400 ft³/s (2,330 m³/s) Nov. 27, 1949, gage height, 16.93 ft (5.160 m); minimum, 572 ft³/s (16.2 m³/s) Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1500	*28,400	804	*10.42	3.176

Minimum discharge, 1,000 ft³/s (28.3 m³/s) Nov. 14, gage height, 3.10 ft (0.945 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2130	2970	1440	2160	1750	2360	2030	5930	6350	3800	2770	2500
2	2030	1980	1430	1980	1670	2130	1940	6860	5300	3850	2810	2280
3	2190	1670	1360	1880	1580	2040	1860	6770	4400	3370	2990	3250
4	1890	1520	1300	1750	1530	1920	2000	5750	5420	3050	3050	3650
5	1710	1400	1240	1580	1490	1830	2450	4770	6320	2810	2990	3290
6	1650	1310	1230	1550	1440	1820	3460	4100	8590	2640	3030	2750
7	1560	1230	1090	1490	1400	2680	4870	3800	10900	2430	2840	2460
8	1550	1210	2640	1430	1360	4050	6230	3850	10300	2500	2770	2270
9	1530	1250	2830	1390	1400	4210	4900	3850	7210	2730	2680	2070
10	1690	1210	2080	1330	2000	3630	3910	4440	6220	2550	2680	1990
11	2450	1160	1940	1280	3000	3010	3440	4420	6340	2640	2640	1950
12	2040	1110	1830	1550	6000	2780	3080	3730	6520	3070	2680	1900
13	1790	1070	1760	1440	6400	2460	3390	3500	6700	2770	2750	1910
14	1650	1020	1680	1390	4500	2220	3180	3520	6610	2610	2660	1930
15	1530	1330	2330	1470	3200	2100	2850	3330	6250	2720	2590	1760
16	1430	2410	3370	1650	2400	2010	2870	3390	5890	2880	2480	1570
17	1340	4870	2720	4190	2570	1880	2640	3140	6370	3090	2380	1490
18	1270	4240	3060	20300	2830	1830	2500	3020	7000	2930	2350	1380
19	1210	2550	2390	9900	2460	1820	2330	3060	7150	2610	2280	1570
20	1160	2040	2070	5600	2280	1750	2190	3120	6400	2460	2200	2590
21	1120	1820	1920	4280	2410	1890	2130	4280	5200	2520	2140	3230
22	1090	1790	1810	3480	2700	2180	2290	4330	5420	2630	2060	2380
23	1060	1580	1850	2990	2600	2590	3480	4530	5250	2660	1930	2220
24	1040	1860	1680	2660	2290	2480	5960	4330	4850	2630	2010	2730
25	1600	3710	1800	2430	2160	2280	9320	3780	5120	2810	2450	2500
26	1820	2460	7000	2260	2120	2190	9250	3960	4770	2900	2700	2170
27	1400	1970	8500	2100	2390	3290	6470	3630	4220	2900	2570	1960
28	1310	1790	5000	1980	2570	2660	5470	3290	4100	3230	2350	1800
29	1440	1680	3500	1860	---	2380	5670	3040	4050	3610	4520	2460
30	1270	1580	2700	1810	---	2210	5600	2870	3750	2900	4200	2390
31	1600	---	2410	1760	---	2120	---	3500	---	2720	2990	---
TOTAL	48550	57790	79490	92920	70560	74790	117760	125890	182970	89020	83540	68400
MEAN	1566	1926	2564	2997	2520	2413	3925	4061	6099	2872	2695	2280
MAX	2450	4870	8500	20300	6400	4210	9320	6860	10900	3850	4520	3650
MIN	1040	1020	1230	1280	1360	1750	1860	2870	3750	2430	1930	1380
CFSM	2.19	2.70	3.59	4.20	3.53	3.38	5.50	5.69	8.54	4.02	3.78	3.19
IN.	2.53	3.01	4.14	4.84	3.68	3.90	6.14	6.56	9.53	4.64	4.35	3.56
AC-FT	96300	114600	157700	184300	140000	148300	233600	249700	362900	176600	165700	135700

CAL YR 1976 TOTAL 1642900 MEAN 4489 MAX 13500 MIN 1020 CFSM 6.29 IN 85.60 AC-FT 3259000
WTR YR 1977 TOTAL 1091680 MEAN 2991 MAX 20300 MIN 1020 CFSM 4.19 IN 56.88 AC-FT 2165000

12190400 BAKER RIVER ABOVE BLUM CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°45'15", long 121°32'45", in NE¼ sec.30, T.38 N., R.10 E., Whatcom County, Hydrologic Unit 17110005, just upstream from Blum Creek, about 1 mi (1.6 km) upstream from end of Baker Lake and 17.5 mi (28.2 km) northeast of Concrete.

PERIOD OF RECORD.--Water years 1976 to February 1977 (discontinued).

WATER QUALITY DATA, OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
DEC												
25...	1418	--	35	6.7	4.4	9	0	.0	.0	3.1	.3	.5
FEB												
23...	1242	E506	25	7.0	4.6	8	2	.1	5.0	2.0	.2	.7

DATE	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)
DEC											
26...	.3	11	0	9	3.5	2.3	.7	.0	2.8	15	.02
FEB											
23...	.3	7	0	6	1.1	2.7	.8	.0	3.6	15	.02

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL ALUMINUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL ZINC (ZN) (UG/L)
DEC											
26...	.15	170	1	50	<10	0	10	200	<100	10	10
FEB											
23...	.24	60	0	20	<10	0	<10	110	<100	0	10

E Estimated.

12190710 SWIFT CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°44'07", long 121°39'26", in NW¼SE¼ sec.32, T.38 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at road crossing 200 ft (61 m) downstream from Morovitz Creek and 1.4 mi (2.3 km) north of Concrete.

PERIOD OF RECORD.--Water years 1975 to February 1977 (discontinued).

WATER QUALITY DATA OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)
OCT 20...	1553	E470	63	6.3	6.3	33	7	.2	10
DEC 26...	1330	--	42	6.8	3.9	14	2	.0	.0
FEB 23...	1158	E368	61	6.6	3.8	23	2	.1	5.0

DATE	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT 20...	11	1.3	1.5	.3	31	0	25	25	10
DEC 26...	4.6	.6	.7	.2	14	0	11	3.6	2.9
FEB 23...	7.9	.8	1.2	.3	26	0	21	10	5.0

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)
OCT 20...	.8	.0	6.3	46	.06	.02	1200	30
DEC 26...	.7	.0	4.2	21	.03	.14	1200	40
FEB 23...	.6	.0	6.2	35	.05	.13	220	10

E Estimated.

12190720 PARK CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°43'58", long 121°39'43", in SE¼SW¼ sec.32, T.38 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, at Baker Lake road crossing, and 14.0 mi (22.5 km) north of Concrete.

PERIOD OF RECORD.--Water years 1975 to February 1977 (discontinued).

WATER QUALITY DATA, OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)
OCT 20...	1620	E220	71	6.2	5.5	31	18	.2	10	8.5	2.4	3.1
DEC 26...	1315	--	42	6.8	4.0	11	6	.0	.0	3.4	.7	.8
FEB 23...	1124	E260	73	6.6	2.8	22	7	.1	5.0	7.0	1.2	1.9

DATE	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)
OCT 20...	1.1	16	0	13	16	20	.8	.1	8.7	53	.07
DEC 26...	.4	7	0	6	1.8	7.5	.4	.1	5.2	22	.03
FEB 23...	.6	19	0	16	7.6	9.5	.7	.0	8.1	38	.05

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL ZINC (ZN) (UG/L)
OCT 20...	.02	670	1	80	<10	0	10	630	<100	30	0
DEC 26...	.13	2000	1	50	<10	0	<10	1100	<100	30	20
FEB 23...	.12	130	0	50	<10	0	<10	250	<100	20	20

E Estimated.

12190800 BOULDER CREEK NEAR CONCRETE, WA

LOCATION.--Lat 47°43'00", long 121°41'34", in SW¼SW¼ sec.6, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, at Baker Lake road crossing, and 12.5 mi (20.1 km) north of Concrete.

PERIOD OF RECORD.--Water years 1975 to July 1977 (discontinued).

WATER QUALITY DATA, OCTOBER 1976 TO JULY 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)
OCT												
20...	1065	--	171	6.3	6.0	--	--	.6	30	--	--	--
20...	1520	E300	170	3.9	6.2	56	56	.6	30	16	3.4	4.8
DEC												
25...	1210	--	73	6.3	3.6	18	16	.1	5.0	5.4	1.2	1.9
FEB												
23...	1110	E203	141	5.3	4.2	44	44	.2	10	13	2.8	4.8
JUL												
27...	0930	--	165	6.1	9.0	--	--	.5	25	--	--	--

DATE	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)
OCT											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	1.6	0	0	0	.0	80	1.2	.3	25	133	.18
DEC											
26...	.7	3	0	2	241	21	.6	.1	12	44	.06
FEB											
23...	1.5	0	0	0	.0	55	1.1	.1	26	106	.14
JUL											
27...	--	--	--	--	--	56	--	--	--	--	--

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL ZINC (ZN) (UG/L)
OCT											
20...	--	--	--	--	--	--	--	--	--	--	--
20...	.02	3500	1	200	<10	0	10	3800	<100	70	10
DEC											
26...	.14	2000	1	60	<10	0	<10	3000	<100	50	10
FEB											
23...	.10	1100	0	50	<10	0	<10	1200	<100	40	20
JUL											
27...	--	5700	--	--	--	--	--	9900	--	50	--

E Estimated.

12191000 SANDY CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°41'05", long 121°42'23", in NE¼NW¼ sec.24, T.37 N., R.8 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, at Baker Lake road crossing, and 10.5 mi (16.9 km) north of Concrete.

DRAINAGE AREA.--10.8 mi² (28.0 km²).

PERIOD OF RECORD.--Water years 1975 to February 1977 (discontinued).

WATER QUALITY DATA, OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)
OCT									
20...	1652	E150	75	6.0	6.9	27	18	.2	10
DEC									
26...	1137	--	31	7.5	4.0	11	1	.1	5.0
FEB									
23...	1043	E216	52	7.2	2.8	18	2	.1	5.0

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT									
20...	7.5	1.9	2.9	1.0	11	0	9	18	23
DEC									
26...	3.5	.6	.9	.4	13	0	11	.7	2.7
FEB									
23...	5.8	.9	1.6	.5	20	0	16	2.0	4.7

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)
OCT								
20...	.8	.1	16	59	.08	.03	1600	10
DEC								
26...	.7	.0	6.9	22	.03	.10	5300	70
FEB								
23...	.5	.0	10	34	.05	.20	210	10

E Estimated.

12191600 BAKER LAKE AT UPPER BAKER DAM, WA

LOCATION.--Lat 48°38'58", long 121°41'22", in NW¼SW¼ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi (0.5 km) upstream from Sulphur Creek, 8.0 mi (12.9 km) north of Concrete and at mile 9.3 (15.0 km).

DRAINAGE AREA.--215 mi² (557 km²).

PERIOD OF RECORD.--Water years 1976 to October 1976 (discontinued).

WATER QUALITY DATA OCTOBER 1976

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)
OCT							
20...	1000	10	33	7.1	12.3	5	10.6
20...	1010	37	27	6.8	11.0	5	10.6
20...	1020	60	19	6.5	9.5	5	8.9
20...	1021	(a)	--	--	--	--	--
20...	1400	10	37	6.8	12.3	5	11.2
20...	1410	37	32	6.6	11.8	5	10.7
20...	1420	72	32	6.3	11.1	5	10.8
20...	1421	(b)	--	--	--	--	--
20...	1530	10	36	7.1	12.0	5	10.9
20...	1540	37	39	7.0	11.9	5	10.7
20...	1550	105	30	6.8	11.0	5	10.8
20...	1551	(c)	--	--	--	--	--

DATE	BICARBONATE (HCO3) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	TOTAL BORON (B) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)
OCT						
20...	10	7.0	5.6	40	140	10
20...	11	17	6.4	60	140	10
20...	10	4.1	2.9	70	200	30
20...	11	--	--	--	--	--
20...	7	11	6.3	70	120	10
20...	6	6.3	5.0	40	260	10
20...	12	8.3	4.8	50	280	20
20...	11	--	--	--	--	--
20...	12	9.0	7.5	60	100	10
20...	16	7.6	6.1	50	130	10
20...	15	5.8	4.0	60	370	50
20...	13	--	--	--	--	--

(a) Composite from 6, 15, 30, 45, 55, and 65 ft sampling depths.
(b) Composite from 6, 15, 30, 45, 60, and 85 ft sampling depths.
(c) Composite from 6, 15, 30, 45, 100 and 100 ft sampling depths.

12191700 BAKER RIVER AT UPPER BAKER DAM, NEAR CONCRETE, WA

LOCATION.--Lat 48°38'54", long 121°41'47", in NE¼SE¼ sec.36, T.37 N., R.8 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam, 8.0 mi (12.9 km) north of Concrete.

DRAINAGE AREA.--215 mi² (557 km²).

PERIOD OF RECORD.--Water years 1971 to February 1977 (discontinued).

REMARKS.--No discharge records available.

WATER QUALITY DATA OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
OCT											
20...	1635	49	6.6	11.5	20	5	.2	10	6.3	1.0	1.6
DEC											
28...	1021	47	6.0	6.1	18	5	.1	5.0	6.1	.8	1.1
FEB											
23...	0951	49	7.2	4.6	18	7	.1	5.0	5.8	.8	1.3

DATE	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)
OCT											
20...	.6	18	0	15	7.2	9.3	.7	.1	8.3	36	.05
DEC											
28...	.5	16	0	13	26	7.7	.6	.1	8.1	32	.04
FEB											
23...	.5	14	0	11	1.4	7.9	.5	.0	6.8	31	.04

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL ALUMINUM (AL) (UG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BORON (B) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL ZINC (ZN) (UG/L)
OCT											
20...	.02	260	1	40	<10	0	<10	330	<100	30	0
DEC											
28...	.08	250	1	60	<10	0	<15	500	<100	30	0
FEB											
23...	.15	90	0	60	<10	0	<10	180	<100	10	10

12191820 SULPHUR CREEK AT GUARD STATION NEAR CONCRETE, WA

LOCATION.--Lat 48°38'15", long 121°42'48", in NW¼SW¼ sec.23, T.37 N., R.8 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, at Baker Lake road crossing, and 8.5 mi (13.7 km) north of Concrete.

PERIOD OF RECORD.--Water years 1975 to February 1977.

WATER QUALITY DATA, OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)
OCT									
20...	1725	E100	160	6.2	6.5	50	21	.2	10
DEC									
26...	1155	--	71	7.1	3.9	23	9	.1	5.0
FEB									
23...	1010	E100	130	7.6	3.2	40	16	.1	5.0

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
OCT									
20...	12	4.9	10	2.5	36	0	30	36	40
DEC									
26...	5.9	2.0	3.1	.9	17	0	14	2.7	13
FEB									
23...	10	3.6	5.5	1.6	31	0	25	1.2	28

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)
OCT								
20...	3.1	.2	32	122	.17	.56	90	0
DEC								
26...	1.0	.1	12	47	.06	.13	5200	100
FEB								
23...	.9	.1	22	87	.12	.50	240	0

E Estimated.

12191900 ROCKY CREEK NEAR CONCRETE, WA

LOCATION.--Lat 48°38'53", long 121°43'50", in NE¼SW¼ sec.35, T.37 N., R.8 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Mt. Baker National Forest, at Baker Lake road crossing, and 8.0 mi (12.9 km) north of Concrete.

PERIOD OF RECORD.--Water years 1971 to February 1977 (discontinued).

WATER QUALITY DATA, OCTOBER 1976 TO FEBRUARY 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	TOTAL ACIDITY AS H+ (MG/L)	TOTAL ACIDITY AS CACO3 (MG/L)
OCT 20...	1345	E90	55	6.5	5.9	27	6	.2	10
DEC 28...	1010	--	26	7.2	6.0	11	2	.1	5.0
FEB 23...	0915	E150	43	7.2	3.0	18	6	.1	5.0

DATE	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT 20...	9.1	1.0	1.4	.4	26	0	21	13	6.2
DEC 28...	3.9	.3	.7	.2	11	0	9	1.1	3.0
FEB 23...	6.7	.5	1.7	.3	16	0	13	1.6	9.2

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)
OCT 20...	.5	.0	7.2	36	.05	.01	250	10
DEC 28...	.6	.3	6.0	18	.02	.10	3000	70
FEB 23...	.9	.0	5.8	32	.04	.02	680	10

E Estimated.

RESERVOIRS IN SKAGIT RIVER BASIN, WA

12175000 ROSS RESERVOIR.--(See sta no. 12175000).

12176500 DIABLO RESERVOIR.--Lat 48°42'56", long 121°07'52", in SE¼ sec.5, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, in Diablo Dam on Skagit River, 1.2 mi (1.9 km) downstream from Thunder Creek, 6.0 mi (9.7 km) northeast of Newhalem, and at mile 101.0 (162.5 km). DRAINAGE AREA, 1,125 mi^2 (2,914 km^2) includes 400 mi^2 (1,036 km^2) in Canada. PERIOD OF RECORD, October 1929 to current year. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem. GAGE, water-stage recorder. Datum of gage is at mean sea level (city of Seattle datum). Prior to Oct. 1, 1964, at datum 0.28 ft (0.085 m) higher.

Reservoir is formed by concrete arch dam, completed in 1930, storage began in October 1929. Usable storage 8,820 acre-ft (10.9 hm^3) between elevations 1,195 ft (364.2 m) normal lower limit of operation, and 1,205 ft (367.3 m) top of taintor gates. Dead storage, below elevation 1,040 ft (317.0 m), 12,900 acre-ft (15.9 hm^3). Crest of spillway is at elevation 1,187 ft (361.8 m). Water used by city of Seattle for power development at Diablo and Gorge powerplants. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,600 acre-ft (112 hm^3) July 14, 1935, elevation, 1,206.5 ft (367.74 m); minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 89,910 acre-ft (111 hm^3) Aug. 14, elevation, 1,206.03 ft (367.598 m); minimum, 81,702 acre-ft (101 hm^3) Mar. 22, elevation, 1,196.73 ft (364.763 m).

12177700 GORGE RESERVOIR.--Lat 48°41'53", long 121°12'25", in NW¼ sec.14, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, in Gorge Dam on Skagit River, 2.4 mi (3.9 km) upstream from city of Seattle Gorge powerplant at Newhalem, and at mile 96.6 (155.4 km). DRAINAGE AREA, 1,159 mi^2 (3,002 km^2), includes 400 mi^2 (1,036 km^2) in Canada. PERIOD OF RECORD, June 1960 to current year. GAGE, water-stage recorder; prior to Apr. 1, 1962, reference point on Gorge Dam or dial in powerhouse. Datum of gage is at mean sea level, Gorge High Dam datum, and 1,792 ft (0.546 m) below mean sea level (Corps of Engineers bench mark).

Reservoir is formed by concrete arch and gravity dam, completed Dec. 27, 1960; storage began June 27, 1960. Usable storage, 2,115 acre-ft (2.61 hm^3) between elevations 865 ft (263.7 m), normal lower limit of operation and 875 ft (266.7 m), top of gates. Lowest outlet at elevation 760 ft (231.6 m). No dead storage. Crest of spillway is at elevation 825 ft (251.5 m). Water used by city of Seattle for power development at Gorge powerplant. Capacity table furnished by city of Seattle. Figures herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 9,758 acre-ft (12.0 hm^3) June 15, 1974, elevation, 880.00 ft (268.224 m); minimum since normal low operating level was reached in December 1960, 1,551 acre-ft (1.91 hm^3) July 20, 1965, elevation, 819.40 ft (249.753 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,366 acre-ft (11.5 hm^3) Jan. 4, elevation, 878.51 ft (267.770 m); minimum, 6,806 acre-ft (8.39 hm^3) Apr. 15, elevation, 867.34 ft (264.365 m).

12191600 BAKER LAKE.--Lat 48°38'58", long 121°41'22", in SW¼ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi (0.5 km) upstream from Sulphur Creek, 8.0 mi (12.9 km) north of Concrete, and at mile 9.3 (15.0 km). DRAINAGE AREA, 215 mi^2 (557 km^2). PERIOD OF RECORD, July 1959 to current year. GAGE, water-stage recorder. Datum of gage is at mean sea level.

Reservoir is formed by concrete gravity dam, completed in June 1959; storage began July 9, 1959. Usable storage, 220,630 acre-ft (272 hm^3) between elevations 724 ft (220.7 m) normal full pool, and 655 ft (199.6 m), minimum operating pool. Dead storage below elevation 655 ft (199.6 m), 64,840 acre-ft (79.9 hm^3). Crest of spillway is at elevation 694 ft (211.5 m). Water used by Puget Sound Power and Light Co. for power development. Capacity table furnished by Puget Sound Power and Light Co. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,930 acre-ft (355 hm^3) July 12, 1972, elevation, 724.49 ft (220.825 m); minimum since normal high operating level was reached in August 1960, 102,621 acre-ft (127 hm^3) May 8, 1977, elevation, 674.81 ft (205.682 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 285,174 acre-ft (352 hm^3) Oct. 10, elevation, 723.94 ft (220.657 m); minimum, 102,621 acre-ft (127 hm^3) May 8, elevation, 674.81 ft (205.682 m).

12193000 LAKE SHANNON.--Lat 48°32'53", long 121°44'22", in SW¼ sec.2, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, at Baker Dam on Baker River near left bank, 0.7 mi (1.1 km) north of Concrete and at mile 1.2 (1.9 km). DRAINAGE AREA, 297 mi^2 (769 km^2). PERIOD OF RECORD, November 1925 to current year. GAGE, water-stage recorder; prior to Nov. 11, 1959, water-stage indicator in powerplant. Datum of gage is at mean sea level. Prior to March 1959, at datum 1.72 ft ;(0.524 m) lower.

Reservoir is formed by concrete arch and gravity dam, completed in June 1927; storage began in November 1925. Usable storage, 142,400 acre-ft (176 hm^3) between elevations 355 ft (108.20 m), minimum operating pool, and 438.6 ft (133.69 m), normal full pool. Dead storage unknown. Spillway crest is at elevation 424.9 ft (129.51 m). Water used by Puget Sound Power and Light Co. for power development. Prior to Nov. 11, 1959, gage-height record furnished by Puget Sound Power and Light Co. from powerplant log. Figures given herein represent contents above elevation 341.7 ft (104.15 m), center line of outlet tunnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 161,470 acre-ft (199 hm^3) Sept. 17, 1968, elevation, 439.50 ft (133.960 m); minimum since October 1953, 28,260 acre-ft (34.8 hm^3) Mar. 6, 1969, elevation, 363.7 ft (110.86 m), not determined prior to October 1953 because of incomplete records.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 158,006 acre-ft (195 hm^3) July 17, elevation, 437.94 ft (133.484 m); minimum, 77,045 acre-ft (95.0 hm^3) Apr. 25, elevation, 395.82 ft (120.646 m).

Reservoirs in Skagit River basin--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	12176500 Diablo Reservoir			12177700 Gorge Reservoir		
Sept. 30	1,200.19	84,682	-	873.05	8,026	
Oct. 31	1,202.77	86,956	+2,274	873.49	8,128	+102
Nov. 30	1,203.77	87,851	+895	872.50	7,900	-228
Dec. 31	1,200.77	85,191	-2,660	871.98	7,782	-118
CAL YR 1976	-	-	-1,047	-	-	+642
Jan. 31	1,198.59	83,297	-1,894	874.44	8,352	+570
Feb. 28	1,202.36	86,591	+3,294	873.53	8,137	-215
Mar. 31	1,202.72	86,912	+321	874.11	8,273	+136
Apr. 30	1,202.30	86,538	-374	868.90	7,118	-1,155
May 31	1,202.15	86,406	-132	872.48	7,895	+777
June 30	1,197.77	82,591	-3,815	874.00	8,247	+352
July 31	1,202.27	86,511	+3,920	872.40	7,877	-370
Aug. 31	1,201.27	85,631	-880	872.82	7,973	+96
Sept. 30	1,201.19	85,561	-70	871.71	7,722	-251
WTR YR 1977	-	-	+879	-	-	-304

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	12191600 Baker Lake			12193000 Lake Shannon		
Sept. 30	723.08	280,907	-	435.88	153,500	
Oct. 31	723.26	281,800	+893	432.28	145,799	-7,701
Nov. 30	714.91	242,109	-39,691	432.89	147,088	+1,289
Dec. 31	721.90	275,107	+32,998	428.68	138,321	-8,767
CAL YR 1976	-	-	+58,437	-	-	-18,982
Jan. 31	719.62	264,088	-11,019	430.81	142,717	+4,396
Feb. 28	715.24	243,616	-20,472	425.59	132,089	-10,628
Mar. 31	693.12	155,540	-88,076	419.02	119,323	-12,766
Apr. 30	682.71	123,343	-32,197	399.79	83,903	-35,420
May 31	693.96	158,387	+35,044	411.18	104,690	+20,787
June 30	723.17	281,354	+122,967	437.37	156,753	+52,063
July 31	723.41	282,544	+1,190	436.02	153,804	-2,949
Aug. 31	722.90	280,018	-2,526	436.40	154,632	+828
Sept. 30	722.61	278,593	-1,425	435.35	152,353	-2,279
WTR YR 1977	-	-	-2,314	-	-	-1,147

12193500 BAKER RIVER AT CONCRETE, WA

LOCATION.--Lat 48°32'24", long 121°44'31", in NW¼NW¼ sec.11, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank just upstream from fish barrier, 0.2 mi (0.3 km) northeast of Concrete, 0.3 mi (0.5 km) downstream from Baker River powerplant, and at mile 0.7 (1.1 km).

DRAINAGE AREA.--297 mi² (769 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to March 1915, September 1943 to current year.

REVISED RECORDS.--WSP 1286: 1911-13(M), 1945-46, drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Mar. 5, 1915, nonrecording gage at site 0.2 mi (0.3 km) downstream at different datum. Sept. 1, 1943, to Jan. 22, 1958, water-stage recorder at site 700 ft (213 m) upstream at datum 172.6 ft (52.61 m) above mean sea level (from river-profile survey). Jan. 23, to June 11, 1958, powerplant record. Supplementary water-stage recorder on left bank about 40 ft (12 m) downstream from fish barrier and on tailrace of powerhouse at same datum.

REMARKS.--Records excellent except those below 300 ft³/s (8.50 m³/s) which are fair. No diversions which are not returned to river above gage. Flow completely regulated by Baker River powerplants and Baker and Shannon Lakes (see stations 12191600 and 12193000).

AVERAGE DISCHARGE.--38 years (water years 1911-14, 1944-77), 2682 ft³/s (75.95 m³/s) 1,943,000 acre-ft/yr (2,400 hm³/yr), adjusted for storage in Lake Shannon since November 1925, and Baker Lake since July 1959.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s (1,040 m³/s) Nov. 19, 1962, elevation, 186.6 ft (56.88 m), computation of peak flow over dam; minimum daily, 30 ft³/s (0.85 m³/s) Mar. 21-26, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,170 ft³/s (118 m³/s) Nov. 5, elevation, 174.95 ft (53.319 m); minimum daily, 70 ft³/s (1.98 m³/s) June 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1650	3510	3200	2920	1110	3910	3190	3800	118	1770	1890	1600
2	2030	2170	3000	2500	1640	4010	3190	3800	122	2140	2090	1960
3	863	2440	2700	2700	2850	4010	3170	3810	439	2000	2160	3570
4	1860	701	1780	1760	1810	3740	3160	3820	134	1730	1950	2820
5	216	1310	3000	1890	1900	3250	3160	3820	130	1670	2050	1760
6	933	1470	2570	1550	2050	3090	3160	3830	130	1310	1940	1860
7	1650	867	184	2600	1890	3100	3180	3830	138	1340	2840	1440
8	2080	1970	2760	3050	1890	3100	3200	3820	142	1210	1870	1580
9	2080	1210	519	3030	2230	3660	3200	1510	138	1250	1940	523
10	1280	864	151	3060	2170	3900	3210	88	731	1650	1980	1490
11	3620	2020	1360	2340	2250	4000	3200	88	118	1140	2800	985
12	2070	1430	1590	2680	2210	3990	3210	107	115	2570	2000	1370
13	1840	1780	1130	1410	3030	3980	3200	126	107	2030	2210	1430
14	1630	1970	334	544	2240	3980	3640	126	111	1260	2380	2380
15	708	2360	391	448	2400	3960	3900	126	85	1270	2190	1150
16	509	1100	151	85	1710	2140	3880	1350	70	2170	2280	407
17	557	2700	151	605	2260	1590	3870	725	80	4020	2030	791
18	1380	3450	1610	2970	752	1180	3860	134	107	3780	2430	687
19	600	2950	1990	4030	1220	2210	3850	395	107	1570	2030	955
20	992	2960	2170	2730	1590	3200	3840	130	90	1160	2130	2080
21	1190	2960	655	2240	1030	3200	3830	504	78	1670	1350	3310
22	3030	2960	1360	2330	2330	1990	3810	1240	82	2550	1620	908
23	1610	3000	2050	2000	2700	2230	3790	2070	82	1840	2300	2060
24	352	3840	946	2450	3190	3010	3760	426	82	1700	2800	1780
25	2090	3830	1030	1400	3190	3100	3750	122	1630	1660	3990	1330
26	151	3840	3720	1310	3180	3180	3780	706	2690	2280	2440	692
27	355	3840	3910	1990	3180	3180	3780	2420	1840	1690	2280	317
28	1560	3950	3220	990	2860	3180	3780	2810	1790	2840	2300	1330
29	885	3060	3080	1440	---	3190	3600	107	2090	2140	3300	1100
30	2970	2540	2860	1600	---	3190	3790	103	1680	1670	1910	1040
31	2010	---	3130	1870	---	3190	---	111	---	2920	1110	---
TOTAL	44831	68992	56622	62442	61662	98750	105940	46056	15256	60000	68690	45585
MEAN	1446	2300	1827	2014	2202	3185	3531	1486	509	1935	2216	1520
MAX	3620	3510	3910	4030	3190	4010	3900	3830	2690	4020	3990	3570
MIN	151	701	151	85	752	1180	3160	88	70	1140	1110	317
AC-FT	88920	136800	112300	123900	122300	195900	210100	91350	30260	119000	136200	90420
†	-6,808	-38,402	+24,231	-6,623	-31,100	-100,842	-67,617	+55,831	+175,030	-1,759	-1,698	-3,704
MEAN‡	1,335	1,654	2,219	1,907	1,643	1,546	2,395	2,393	3,451	1,906	2,187	1,458
AC-FT‡	82,110	98,400	136,500	117,300	91,200	95,060	142,500	147,200	205,300	117,200	134,500	86,720

CAL YR 1976: TOTAL 940,679 MEAN 2,570 MAX 7,010 MIN 112 AC-FT 1,866,000
DO......: MEAN‡ 2,623 AC-FT‡ 1,905,000
WTR YR 1977: TOTAL 734,824 MEAN 2,013 MAX 4,030 MIN 70 AC-FT 1,458,000
DO......: MEAN‡ 2,009 AC-FT‡ 1,455,000

† Change in contents, in acre-feet, in Baker Lake and Lake Shannon.
‡ Adjusted for change in contents in Baker Lake and Lake Shannon.

12193500 BAKER RIVER AT CONCRETE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at old highway bridge 0.2 mi (0.3 km) downstream from gaging station.

PEIORD OF RECORD.--Water years 1962-65, October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)
OCT												
12...	1215	3670	60	7.2	12.5	8	4	10.6	15	3	4.6	.8
26...	1300	151	52	7.4	10.8	21	3	11.3	19	7	6.1	.8
NOV												
09...	1255	360	55	7.1	12.0	8	2	10.3	17	3	5.2	.9
17...	1230	4090	50	7.2	11.0	17	4	10.7	17	6	5.4	.8
DEC												
07...	1230	99	50	7.1	8.8	13	2	11.4	18	4	5.8	.9
21...	1120	151	60	7.4	7.5	17	4	12.5	21	8	6.5	1.2
JAN												
12...	1500	3460	50	7.2	5.4	17	6	11.1	21	5	6.2	1.3
25...	1135	890	60	7.2	5.6	13	7	12.2	20	4	6.2	1.1
FEB												
02...	1145	2820	70	7.2	5.8	21	6	11.5	21	6	6.4	1.1
22...	1230	3610	60	6.9	5.5	21	4	12.0	20	5	6.3	1.1
MAR												
15...	1215	4000	61	7.3	5.9	17	2	12.7	21	8	6.9	.9
30...	1300	3100	65	7.3	6.5	9	2	12.4	19	6	6.0	1.0
APR												
12...	1130	3200	60	7.1	7.5	21	2	12.5	19	5	6.0	1.0
26...	1420	3810	60	7.1	7.9	17	4	12.0	21	6	6.8	1.0
MAY												
10...	1305	88	61	7.2	7.9	13	3	12.0	22	5	7.3	1.0
24...	1120	142	58	7.3	9.7	13	2	12.1	22	6	7.0	1.1
JUN												
14...	1255	103	65	7.5	10.1	13	4	12.2	23	6	7.1	1.2
29...	1200	3040	58	6.5	10.5	42	2	11.0	24	9	7.5	1.3
JUL												
06...	1245	2660	60	6.6	10.8	13	3	11.0	22	7	7.2	1.0
19...	1410	3090	55	7.0	12.1	13	3	10.9	21	7	6.8	1.0
AUG												
02...	1300	3000	55	7.1	15.5	17	4	9.8	23	9	8.0	.8
16...	1235	2800	54	6.9	14.2	4	3	10.0	22	11	7.0	1.1
SEP												
07...	1340	3140	60	--	14.2	21	5	10.0	18	7	5.8	.9
20...	1330	3090	50	6.7	14.0	13	4	9.5	21	8	6.7	.9

12193500 BAKER RIVER AT CONCRETE, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
12...	1.3	.5	15	0	12	1.5	5.1	.6	.01	.03	.01	.00
25...	1.1	.4	15	0	12	1.0	7.2	.7	.03	.04	.01	.00
NOV												
09...	1.2	.4	17	0	14	2.2	6.5	.4	.02	.03	.01	.00
17...	1.2	.4	14	0	11	1.4	6.9	.5	.04	.05	.02	.00
DEC												
07...	1.2	.4	17	0	14	2.2	7.1	.6	.07	.05	.01	.00
21...	1.3	.5	16	0	13	1.0	7.6	2.4	.12	.06	.01	.00
JAN												
12...	1.4	.5	19	0	16	1.9	7.2	.6	.11	.07	.01	.00
25...	1.6	.5	20	0	16	2.0	6.8	.7	.12	.06	.02	.00
FEB												
02...	1.3	.5	18	0	15	1.8	6.5	.8	.18	.04	.02	.00
22...	1.3	.5	18	0	15	3.6	8.4	.6	.10	.02	.01	.00
MAR												
15...	1.4	.5	16	0	13	1.3	9.7	.9	.11	.03	.01	.00
30...	1.3	.5	16	0	13	1.3	12	1.0	.10	.02	.01	.00
APR												
12...	1.1	.5	17	0	14	2.2	6.7	.8	.09	.03	.01	.00
25...	1.3	.5	19	0	16	2.4	10	.6	.08	.02	.01	.00
MAY												
10...	1.6	.5	21	0	17	2.1	7.0	.8	.10	.02	.01	.00
24...	1.4	.4	19	0	16	1.5	6.6	.6	.11	.03	.01	.00
JUN												
14...	1.9	.5	20	0	16	1.0	6.0	.7	.14	.04	.00	.00
29...	1.4	.4	18	0	15	9.1	6.2	.7	.09	.03	.00	.00
JUL												
06...	1.4	.4	18	0	15	7.2	6.0	.7	.10	.04	.00	.00
19...	1.4	.5	17	0	14	2.7	9.7	.7	.09	.03	.01	.00
AUG												
02...	1.3	.5	17	0	14	2.2	6.9	1.5	.07	.05	.07	.00
16...	1.3	.4	14	0	11	2.8	6.8	.7	.06	.02	.02	.00
SEP												
07...	1.1	.5	14	--	11	--	8.2	.7	.09	.04	.02	.00
20...	1.2	.4	15	0	12	4.8	6.5	.5	.05	.03	.05	.00

DATE	TOTAL ALUM-INUM (AL) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT												
12...	--	--	--	--	0	1	--	10	.0	--	--	10
25...	--	--	--	--	0	0	--	4	.0	--	--	10
NOV												
09...	--	--	--	--	0	1	--	8	.0	--	--	20
17...	--	--	--	--	0	1	--	21	.0	--	--	10
DEC												
07...	--	--	--	--	0	4	--	18	.1	--	--	10
21...	--	--	--	--	0	3	--	22	.0	--	--	10
JAN												
12...	--	--	--	--	0	1	--	56	.3	--	--	10
25...	310	--	--	--	0	3	500	12	.4	--	--	0
FEB												
02...	290	--	--	--	0	6	510	16	.0	--	--	0
22...	170	--	--	--	0	0	230	5	.1	--	--	0
MAR												
15...	170	--	--	--	0	3	330	18	.0	--	--	30
30...	90	--	--	--	0	0	220	8	.0	--	--	0
APR												
12...	--	--	--	--	0	5	--	9	--	--	--	10
25...	170	--	--	--	0	1	280	6	.0	--	--	0
MAY												
10...	170	--	--	--	0	0	300	3	.2	--	--	0
24...	110	--	--	--	0	1	250	4	.1	--	--	0
JUN												
14...	140	--	--	--	0	1	320	10	.0	--	--	6
29...	150	--	--	--	0	7	220	11	.1	--	--	0
JUL												
05...	120	--	--	--	0	1	230	17	.2	--	--	0
19...	190	--	--	--	0	1	220	6	.0	--	--	0
AUG												
02...	380	--	--	--	0	0	210	4	.0	--	--	10
16...	210	--	--	--	0	1	130	9	.2	--	--	10
SEP												
07...	250	--	--	--	0	1	240	3	.1	--	--	0
20...	410	0	100	0	0	6	330	4	.3	0	0	0

12194000 SKAGIT RIVER NEAR CONCRETE, WA

LOCATION.--Lat 48°31'28", long 121°46'11", in SE1/4NE1/4 sec.16, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110007, on right bank at Dalles Bridge 1.3 mi (2.1 km) southwest of Concrete, 2.4 mi (3.9 km) downstream from Baker River, and at mile 54.1 (87.0 km).

DRAINAGE AREA.--2,737 mi² (7,089 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1566: 1937. WSP 1736: 1948. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 130.0 ft (39.62 m) above mean sea level. Prior to Dec. 10, 1924, nonrecording gage 200 ft (61 m) upstream and Dec. 10, 1924, to Sept. 30, 1957, water-stage recorder at present site; both gages at datum 12.7 ft (3.87 m) higher.

REMARKS.--Water-discharge records excellent. Flow regulated for powerplants on Baker and upper Skagit Rivers, by Ross Reservoir (see sta 12175000), and by Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (see stations 12176500, 12177700, 12191600, 12193000).

AVERAGE DISCHARGE.--53 years, 15,200 ft³/s (430.4 m³/s), 11,010,000 acre-ft/yr (13,600 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 154,000 ft³/s (4,360 m³/s) Nov. 27, 1949, gage height, 40.8 ft (12.44 m); minimum probably less than 2,160 ft³/s (61.2 m³/s) during period Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed; minimum daily recorded, 2,610 ft³/s (73.9 m³/s) Nov. 14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of 60.1 ft (18.32 m), present datum, at site 200 ft (61 m) upstream, from floodmarks, discharge about 500,000 ft³/s (14,160 m³/s). Records of other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 58,400 ft³/s (1,650 m³/s) Jan. 18, gage height, 27.74 ft (8.455 m); minimum, 3,890 ft³/s (110 m³/s) Oct. 25, gage height, 13.48 ft (4.109 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9320	11900	13300	11900	9650	11800	11200	17600	15600	10200	8670	7700
2	9630	9050	13600	12200	9770	11300	9600	19100	13800	10600	8870	7100
3	9340	8830	12700	14000	14700	11800	9250	19300	11600	9890	9330	11700
4	9780	6830	11300	12000	9740	10100	9480	17200	12900	8460	9360	10900
5	5430	7370	12600	17900	7980	11200	10400	15200	14800	8360	9370	9730
6	5680	7130	11900	10500	7970	11900	12500	13800	18300	7650	8760	8680
7	6060	5950	10600	12200	8770	14200	15400	13300	22800	7260	10000	7170
8	7440	6830	15100	13000	8620	17100	17800	13400	22100	7210	8760	6660
9	7530	6900	13900	11300	8310	17900	15700	11200	15100	7660	8630	5380
10	6460	7040	11500	13000	9230	15400	13900	10800	13900	7630	8630	6170
11	10000	9010	12700	12100	13300	12900	13500	11000	13600	7360	9540	5510
12	7870	8660	12300	13100	13900	13700	12800	9490	13900	10200	8830	5960
13	8000	7460	11300	11500	17900	15700	13600	8910	14000	8990	9270	5980
14	7930	7090	9780	10600	13400	15500	14100	8940	13800	7640	8760	6660
15	6520	8830	10400	10200	12800	15500	13800	8610	13200	7720	8780	5480
16	5390	9710	11800	9270	11600	12900	12500	10700	12600	8990	9500	4750
17	5150	16900	11900	19700	12700	11300	11600	9200	13400	12400	8920	5020
18	6030	16900	12200	45000	11400	10400	11900	8030	14300	11400	9040	4870
19	5230	12800	9970	31000	9970	11100	12230	8340	14600	8150	8300	5270
20	5290	11400	11400	21500	9110	11300	12000	8120	13400	7390	8220	8110
21	5340	9550	9460	14200	10300	13200	10800	10600	11100	7910	7500	11200
22	7480	9700	9300	10900	11500	12200	10800	11700	11600	9020	7210	6760
23	5600	9320	9200	13600	11200	12000	13200	12700	11200	8290	7730	6880
24	4290	10500	7390	13300	10400	13400	18500	10900	10300	8080	8630	8050
25	6200	13800	7880	13000	10100	11300	24200	9440	12400	8360	12300	7160
26	4800	11300	16700	13300	10200	10900	23900	10200	13000	9210	10300	5630
27	4680	10900	23200	13600	10500	12300	18900	11500	11100	8630	8780	6860
28	5690	11700	16800	12300	10800	12200	17000	11200	10700	10600	8040	5300
29	5560	13000	14300	12500	---	13100	17100	7940	11000	10400	15600	6280
30	7670	12800	12000	11000	---	12500	16900	7450	10100	8610	14400	6160
31	7140	---	10900	11700	---	11600	---	8760	---	9560	7930	---
TOTAL	208390	298450	379260	472570	301870	397700	424530	354630	410000	274550	288680	206490
MEAN	6722	9949	12230	15240	10780	12830	14150	11440	13670	8856	9326	6883
MAX	10000	16900	23200	45000	17900	17900	24200	19300	22800	12400	15600	11700
MIN	4290	5950	7390	9270	7970	10100	9250	7450	10100	7210	7210	4750
AC-FT	413300	592000	752300	937300	598800	788800	842100	703400	813200	544600	572200	409600

CAL YR 1976 TOTAL 6183640 MEAN 16900 MAX 37000 MIN 4290 AC-FT 12270000
WTR YR 1977 TOTAL 4016930 MEAN 11010 MAX 45000 MIN 4290 AC-FT 7968000

12194000 SKAGIT RIVER NEAR CONCRETE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken 350 ft (107 m) downstream from gaging station.

PERIOD OF RECORD.--Water years 1971, 1974, October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT									
12...	1240	9600	53	7.5	11.5	8	6	11.4	.01
26...	1325	8510	56	7.6	8.0	25	2	11.6	.02
NOV									
09...	1315	8530	60	7.5	12.0	6	1	11.3	.02
17...	1300	13700	67	7.2	9.5	25	6	11.3	.04
DEC									
07...	1255	10700	65	7.5	7.3	13	2	12.2	.08
21...	1140	9060	66	7.6	5.9	13	2	12.8	.12
JAN									
12...	1530	14000	60	7.6	5.0	8	3	12.0	.10
25...	1205	12900	68	7.2	4.6	8	3	13.0	.16
FEB									
02...	1205	9840	70	7.6	5.1	13	2	12.5	.10
22...	1250	11200	62	6.9	5.5	21	3	12.1	.15
MAR									
15...	1230	15600	71	7.6	6.1	8	1	12.7	.10
30...	1340	11900	72	7.5	7.0	9	1	12.7	.15
APR									
12...	1150	10500	62	7.6	7.3	8	2	12.6	.16
26...	1450	23800	46	7.3	7.2	25	15	12.2	.10
MAY									
10...	1325	10900	55	7.2	8.6	8	3	11.6	.07
24...	1145	10600	50	7.6	7.9	8	2	12.0	.16
JUN									
14...	1325	13000	38	7.6	11.6	13	6	11.2	.06
28...	1230	17200	58	8.1	12.0	21	3	11.6	.07
JUL									
06...	1320	9370	49	7.1	11.3	8	2	11.6	.06
19...	1505	9630	56	7.2	13.5	8	5	11.6	.05
AUG									
02...	1330	10000	45	7.6	16.1	17	45	10.6	.05
16...	1315	9630	43	7.1	15.0	25	65	10.7	.06
SEP									
07...	1355	8900	46	--	13.3	17	8	11.8	.05
20...	1405	6780	49	7.0	12.0	17	5	10.7	.05

DATE	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT								
12...	.04	.01	.00	0	2	12	.0	10
26...	.04	.01	.00	0	0	3	.0	0
NOV								
09...	.04	.01	.00	0	6	9	.0	10
17...	.06	.01	.00	0	3	84	.0	10
DEC								
07...	.04	.00	.00	0	3	15	.2	0
21...	.04	.01	.00	0	2	16	.1	0
JAN								
12...	.08	.01	.00	0	1	61	.1	10
25...	.02	.01	.00	0	2	10	.3	10
FEB								
02...	.02	.01	.00	0	3	10	.0	0
22...	.02	.02	.00	0	0	8	.1	0
MAR								
15...	.02	.00	.00	0	2	6	.0	0
30...	.02	.01	.00	0	0	17	.0	0
APR								
12...	.03	.01	.00	0	0	4	.0	0
26...	.02	.06	.00	0	0	4	.0	0
MAY								
10...	.02	.01	.00	0	0	2	.0	0
24...	.04	.01	.00	<10	1	13	.0	0
JUN								
14...	.03	.01	.00	0	1	3	.0	0
28...	.03	.01	.00	0	1	10	.0	2
JUL								
06...	.03	.00	.00	0	1	12	.1	0
19...	.03	.01	.00	0	1	5	.0	4
AUG								
02...	.17	.12	.00	0	1	5	.0	0
16...	.18	.15	.00	0	1	7	.1	2
SEP								
07...	.04	.02	.00	0	1	21	.1	10
20...	.04	.02	.00	0	1	2	.0	0

12190150 SKAGIT RIVER NEAR HAMILTON, WA

LOCATION.--Lat 48°30'27", long 122°00'40", in NW¼SE¼ sec.22, T.35 N., R.6 E., Skagit County, Hydrologic Unit 17110007, on left bank 1.5 mi (2.4 km) southwest of Hamilton, 2.3 mi (3.7 km) upstream from mouth of Day Creek, and at mile 36.5 (58.7 km).

DRAINAGE AREA.--2,870 mi² (7,480 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--June 1975 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30.5 m), from topographic map.

REMARKS.--Water-discharge records fair. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs, Baker Lake and Lake Shannon (see sta 12176500, 12177700, 12191600, 12193000).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 122,000 ft³/s (3,460 m³/s) Dec. 4, 1975, gage height, 20.16 ft (6.145 m); minimum, 3,860 ft³/s (109 m³/s) Oct. 24, 1976, gage height, 2.49 ft (0.759 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 62,600 ft³/s (1,770 m³/s) Jan. 18, gage height, 14.01 ft (4.270 m); minimum, 3,860 ft³/s (109 m³/s) Oct. 24, gage height, 2.49 ft (0.759 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9690	12500	13800	12800	10500	12100	12000	18300	16400	10400	9520	7800
2	9970	9500	13500	12200	10400	12000	10400	20000	15200	10900	8900	7500
3	9760	9400	13200	14600	11100	12500	10000	20900	12800	10400	9680	11800
4	9900	7200	12000	13200	10600	10900	10200	18400	13400	9520	9740	11700
5	6830	7700	13000	17100	8390	11700	11400	16100	15600	8960	9810	10100
6	5980	7600	12600	14900	8510	12300	13300	14600	18300	8480	10100	9000
7	6330	6300	11200	12500	9620	15100	16400	14100	23200	7860	10400	7700
8	7580	7060	15800	13300	9290	18500	19000	14100	23600	7830	9230	7200
9	7950	7200	14500	11900	8600	19200	16800	12400	16100	8210	9110	5700
10	6400	7280	12000	13300	9650	17100	15100	11600	14000	8120	9000	6400
11	10100	9600	13300	12700	13900	14100	14300	11900	14300	8210	9930	5800
12	8900	9000	12800	13700	14000	14100	14400	10500	14100	10200	9230	6200
13	8240	7900	11900	12600	19300	16300	14600	9760	14300	9710	9520	6300
14	8300	7500	10300	11400	14000	16100	15100	9770	14100	8450	10100	7200
15	7200	8930	10900	11200	13300	16000	14600	9650	13500	8270	10100	6300
16	6080	9710	12300	10300	12600	14000	13500	10800	13000	8840	10100	5000
17	5670	16700	12600	16500	12700	12200	12300	10700	13500	12300	9450	5300
18	6610	18500	13900	48700	12900	11000	12400	8930	14400	12000	9450	5100
19	5620	13400	10800	35500	10700	11600	13000	8930	14800	9140	9260	5400
20	5980	12200	12100	23400	10300	12100	12700	9170	13800	8060	8720	8000
21	5610	10000	10800	19000	10700	14300	11700	11000	11600	8300	8270	11800
22	8030	10100	9770	17600	12100	13300	11500	12200	11800	9230	7670	7200
23	6490	9800	9870	15500	12100	13000	13800	13100	11700	8720	8090	7300
24	4590	10400	8510	15600	11400	14500	19100	12400	10800	8570	10100	8600
25	6380	14000	7530	14400	10900	12200	25700	10400	12600	9140	12700	7600
26	5100	12000	19000	13700	10900	11900	26100	11000	13200	9280	11300	6200
27	4900	11400	26800	14000	11200	13200	20700	11800	11400	9360	9450	5200
28	6000	11800	18000	12800	12100	13200	18000	12000	11000	10400	8600	5700
29	5800	13500	15700	12500	---	14000	18000	9330	11200	10800	15700	6600
30	8060	13100	12900	12300	---	13600	17700	8360	10500	9360	11600	6400
31	7500	---	11600	12400	---	12500	---	9490	---	9930	8360	---
TOTAL	221550	312280	402980	496200	321560	424600	453800	381670	424200	288870	303270	217680
MEAN	7147	10410	13000	16010	11480	13700	15130	12310	14140	9318	9783	7253
MAX	10100	18500	26800	48700	19300	19200	26100	20900	23600	12300	15700	11800
MIN	4590	6300	7530	10300	8390	10900	10000	8360	10500	7830	7670	5000
AC-FT	439400	619400	799300	984200	637800	842200	900100	757000	841400	573000	601500	431600

CAL YR 1976 TOTAL 6406510 MEAN 17500 MAX 39000 MIN 4590 AC-FT 12710000
WTR YR 1977 TOTAL 4248580 MEAN 11640 MAX 48700 MIN 4590 AC-FT 8427000

12196150 SKAGIT RIVER NEAR HAMILTON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: November 1974 to current year.

INSTRUMENTATION.--Temperature recorder since Nov. 6, 1974.

REMARKS.--Temperature recorder clock stopped Dec. 2-17 (range in temperature 6.7°C to 7.8°C), June 6-30 (range in temperature 9.4°C to 13.3°C).

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 16.5°C Aug. 2-5, 9, 10, 12, 13, 16, 1977; minimum, 2.0°C Feb. 8, 1975.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 16.5°C Aug. 2-5, 9, 10, 12, 13, 16; minimum, 4.0°C Jan. 25-30.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	11.5	11.5	9.5	9.0	9.0	7.0	6.5	6.5	5.0	4.5	4.5
2	11.5	10.5	11.0	9.0	8.5	9.0	---	---	---	5.0	4.5	4.5
3	10.5	10.0	10.0	9.5	8.5	9.0	---	---	---	5.5	5.0	5.5
4	10.5	9.5	10.0	9.5	8.5	9.0	---	---	---	5.5	5.0	5.5
5	10.5	9.5	10.0	9.5	8.5	9.0	---	---	---	5.0	4.5	4.5
6	11.0	9.5	10.0	9.0	8.5	9.0	---	---	---	5.5	5.0	5.5
7	11.0	10.0	10.5	9.0	8.5	9.0	---	---	---	5.0	4.5	4.5
8	11.0	10.5	11.0	9.5	8.5	9.0	---	---	---	4.5	4.5	4.5
9	11.0	10.5	11.0	9.5	9.5	9.5	---	---	---	4.5	4.5	4.5
10	11.0	10.5	11.0	9.5	9.0	9.0	---	---	---	4.5	4.5	4.5
11	11.0	10.5	11.0	9.0	9.0	9.0	---	---	---	5.0	4.5	4.5
12	11.0	10.5	11.0	9.0	8.5	9.0	---	---	---	5.0	5.0	5.0
13	11.0	10.0	10.5	8.5	8.0	8.0	---	---	---	5.5	5.0	5.5
14	11.0	10.0	10.5	8.5	7.0	8.0	---	---	---	5.5	5.5	5.5
15	10.5	9.5	10.0	9.0	8.5	9.0	---	---	---	5.5	5.5	5.5
16	10.0	9.0	9.5	9.5	9.0	9.0	---	---	---	5.5	5.5	5.5
17	10.0	8.5	9.0	9.0	9.0	9.0	---	---	---	5.5	5.5	5.5
18	10.0	8.5	9.0	9.0	8.0	8.5	6.5	6.5	6.5	5.5	5.0	5.5
19	9.5	9.0	9.0	8.0	8.0	8.0	6.5	5.5	6.0	5.0	5.0	5.0
20	10.0	8.0	9.0	8.0	8.0	8.0	6.0	5.0	5.5	5.0	5.0	5.0
21	9.5	8.0	9.0	8.0	8.0	8.0	6.0	5.5	5.5	5.5	5.0	5.5
22	10.0	8.0	9.0	8.5	8.0	8.0	6.5	6.0	6.5	5.5	5.0	5.5
23	10.0	9.0	9.5	8.5	8.0	8.0	6.5	6.0	6.5	5.0	4.5	4.5
24	9.5	8.5	9.0	8.5	8.0	8.0	6.5	5.5	6.0	4.5	4.5	4.5
25	9.5	8.5	9.0	8.5	6.5	8.0	6.0	5.5	5.5	4.5	4.0	4.5
26	9.5	8.5	9.0	6.5	6.0	6.5	6.5	6.0	6.5	4.5	4.0	4.5
27	9.5	8.5	9.0	6.0	5.5	5.5	6.0	6.0	6.0	4.5	4.0	4.5
28	9.5	9.0	9.0	6.0	5.5	5.5	6.0	5.0	5.5	4.5	4.0	4.5
29	9.5	9.0	9.0	6.5	6.0	6.5	5.5	5.5	5.5	4.5	4.0	4.5
30	9.5	9.0	9.0	6.5	6.0	6.5	5.5	5.0	5.5	4.5	4.0	4.5
31	9.5	9.0	9.0	---	---	---	5.0	4.5	4.5	4.5	4.5	4.5
MONTH	11.5	8.0	10.0	9.5	5.5	8.0	7.0	4.5	6.0	5.5	4.0	5.0

12194000 SKAGIT RIVER NEAR HAMILTON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	4.5	5.0	5.5	5.0	5.5	7.0	5.5	6.5	9.0	6.5	8.0
2	5.5	5.0	5.5	5.5	5.0	5.5	6.5	6.0	6.5	8.5	7.0	8.0
3	5.0	4.5	4.5	5.5	5.0	5.5	7.0	6.0	6.5	7.0	7.0	7.0
4	5.0	4.5	4.5	5.5	5.0	5.5	8.5	6.5	8.0	8.0	7.0	8.0
5	5.0	5.0	5.0	5.5	5.0	5.5	8.5	7.0	8.0	8.0	7.0	8.0
6	5.0	5.0	5.0	5.5	5.5	5.5	8.5	8.0	8.0	9.0	7.0	8.0
7	5.5	5.0	5.5	5.5	5.5	5.5	8.0	7.0	8.0	10.0	8.5	9.0
8	5.5	5.5	5.5	5.5	5.5	5.5	8.0	6.0	6.5	10.0	9.0	9.5
9	6.0	5.5	5.5	5.0	5.0	5.0	6.5	6.0	6.5	10.5	9.5	10.0
10	6.5	6.0	6.5	5.5	4.5	5.0	6.5	6.0	6.5	10.5	8.5	9.5
11	6.0	6.0	6.0	5.5	5.0	5.5	8.0	6.0	6.5	8.5	7.0	8.0
12	6.0	6.0	6.0	6.0	5.0	5.5	8.0	6.5	7.0	9.0	8.0	8.5
13	6.0	5.5	5.5	6.0	5.0	5.5	8.0	6.5	7.0	9.5	8.5	9.0
14	5.5	5.0	5.5	5.0	5.0	5.0	6.5	6.0	6.5	9.0	8.5	9.0
15	5.5	5.0	5.5	5.5	5.0	5.5	6.5	6.5	6.5	10.0	9.0	9.5
16	5.5	5.5	5.5	6.0	5.0	5.5	7.0	6.0	6.5	9.5	9.0	9.0
17	5.5	5.5	5.5	5.5	5.0	5.5	6.5	6.0	6.5	9.5	9.0	9.0
18	6.0	5.5	5.5	5.5	5.0	5.5	7.0	6.5	6.5	10.0	9.0	9.5
19	6.0	5.5	5.5	6.0	5.5	5.5	6.5	6.0	6.5	11.0	9.5	10.0
20	6.0	5.5	5.5	5.5	5.5	5.5	7.0	6.0	6.5	10.5	9.5	10.0
21	6.0	5.5	5.5	5.5	5.5	5.5	7.0	7.0	7.0	10.0	9.5	10.0
22	5.5	5.5	5.5	6.0	5.5	5.5	8.0	7.0	8.0	10.5	9.5	10.0
23	6.0	5.0	5.5	6.5	6.0	6.5	8.0	6.5	8.0	10.5	8.5	9.5
24	5.5	5.0	5.5	6.0	6.0	6.0	8.5	8.0	8.0	9.0	8.0	8.5
25	5.0	5.0	5.0	6.0	6.0	6.0	8.5	6.5	8.0	9.5	8.5	9.0
26	5.0	5.0	5.0	6.0	5.5	5.5	6.5	6.5	6.5	10.0	9.5	10.0
27	6.0	5.0	5.5	5.5	5.0	5.5	6.5	6.5	8.0	9.5	9.0	9.0
28	5.5	5.5	5.5	6.0	5.5	5.5	8.0	8.0	8.5	10.0	9.0	9.5
29	---	---	---	7.0	5.5	6.5	8.0	6.5	8.0	10.0	9.5	10.0
30	---	---	---	6.5	6.0	6.5	8.5	6.5	8.0	10.0	9.0	9.5
31	---	---	---	6.5	5.5	6.0	---	---	---	9.5	9.0	9.0
MONTH	6.5	4.5	5.5	7.0	4.5	5.5	8.5	5.5	7.5	11.0	7.0	9.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.5	9.0	9.0	14.5	12.0	13.5	15.5	14.5	15.5	14.0	13.0	13.5
2	9.5	9.0	9.0	12.0	12.0	12.0	16.5	15.5	16.0	13.5	13.0	13.5
3	10.0	9.0	9.5	12.0	11.0	11.5	16.5	15.0	15.5	13.5	13.0	13.5
4	9.5	9.0	9.0	13.5	11.0	12.0	16.5	15.5	16.0	14.0	13.0	13.5
5	11.0	9.0	10.0	13.5	12.0	13.0	16.5	15.5	16.0	14.0	13.0	13.5
6	---	---	---	13.0	11.5	12.0	15.5	14.5	15.5	14.0	13.5	13.5
7	---	---	---	13.5	11.5	12.0	15.5	14.5	15.5	13.5	13.0	13.5
8	---	---	---	14.5	12.0	13.5	16.0	14.5	15.5	14.0	12.0	13.5
9	---	---	---	14.0	12.0	13.5	16.5	15.0	15.5	14.0	13.0	13.5
10	---	---	---	13.0	11.5	12.0	16.5	15.0	15.5	14.0	12.0	13.5
11	---	---	---	13.5	11.5	12.0	15.5	15.5	15.5	14.5	13.0	13.5
12	---	---	---	12.0	11.5	12.0	16.5	15.5	16.0	15.0	13.5	14.5
13	---	---	---	12.0	11.0	11.5	16.5	15.5	16.0	14.5	13.5	14.0
14	---	---	---	14.0	11.5	13.0	16.0	15.0	15.5	14.0	13.5	13.5
15	---	---	---	14.5	13.5	14.0	16.0	15.0	15.5	13.5	12.0	13.0
16	---	---	---	14.5	13.0	13.5	16.5	15.5	16.0	12.0	11.5	12.0
17	---	---	---	13.5	12.0	13.0	16.0	15.5	15.5	12.0	11.0	11.5
18	---	---	---	13.5	12.0	13.0	16.0	15.0	15.5	12.0	11.0	11.5
19	---	---	---	14.5	13.0	13.5	16.0	14.5	15.5	12.0	11.0	11.5
20	---	---	---	14.5	13.5	14.0	16.0	15.0	15.5	12.0	11.0	11.5
21	---	---	---	14.5	13.5	14.0	15.5	14.0	14.5	12.0	11.0	11.5
22	---	---	---	14.5	13.5	14.0	14.5	13.5	14.0	12.0	11.0	11.5
23	---	---	---	15.5	13.5	14.5	15.0	13.5	14.5	12.0	11.0	11.5
24	---	---	---	15.5	14.0	14.5	13.5	13.0	13.5	11.0	10.0	10.5
25	---	---	---	15.0	14.0	14.5	13.0	12.0	12.0	11.0	10.0	10.5
26	---	---	---	14.5	13.5	14.0	13.0	12.0	12.0	11.5	10.0	11.0
27	---	---	---	15.5	14.0	14.5	13.5	12.0	13.0	11.5	10.5	11.0
28	---	---	---	15.5	13.5	14.5	13.0	12.0	12.0	11.5	10.5	11.0
29	---	---	---	14.0	13.0	13.5	13.0	12.0	12.0	12.0	10.5	11.0
30	---	---	---	14.5	12.0	13.5	13.0	11.5	12.0	---	---	---
31	---	---	---	15.5	14.0	14.5	14.0	13.0	13.5	---	---	---
MONTH	11.0	9.0	9.5	15.5	11.0	13.0	16.5	11.5	14.5	15.0	10.0	12.5
YEAR	16.5	4.0	9.0									

12197040 TANK CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'38", long 122°06'19", in NW¼NE¼ sec.13, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on right bank 350 ft (107 m) upstream from State Highway 20 crossing, and 2 mi (3.2 km) west of Lyman.

DRAINAGE AREA.--About 2.5 mi² (6.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30 m) from topographic map.

REMARKS.--Water-discharge records good except for periods of no gage-height record, which are fair. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86 ft³/s (2.44 m³/s) Dec. 2, 1975, gage height, 4.26 ft (1.298 m); no flow for several days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 46 ft³/s (1.30 m³/s) Jan. 18, gage height, 3.49 ft (1.064 m); no flow Aug. 8-22, Sept. 8-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	1.6	.60	1.4	2.2	1.8	4.5	1.4	6.9	.67	.19	.16
2	.35	.78	.62	2.0	2.0	1.6	3.7	2.3	7.2	.49	.18	.18
3	.45	.59	.60	2.0	2.0	2.0	3.2	2.5	6.3	.82	.05	.19
4	.41	.51	.68	1.6	1.8	1.7	2.8	3.6	3.4	.73	.05	.20
5	.41	.51	.65	1.6	1.6	1.5	2.6	3.1	2.5	.44	.05	.14
6	.41	.60	2.3	1.5	1.6	2.9	2.3	2.1	1.9	.42	.03	.08
7	.37	.89	5.0	1.4	1.7	2.6	2.1	1.7	1.6	.38	.01	.07
8	.33	1.0	3.4	1.4	1.6	3.0	2.9	1.6	1.5	.36	.00	.00
9	.32	.89	3.2	1.3	1.7	3.8	2.6	1.4	1.4	.36	.00	.00
10	.55	.89	2.1	1.4	2.3	4.5	2.6	1.9	1.3	.31	.00	.00
11	.76	.80	1.6	2.1	2.4	2.4	2.6	2.4	1.2	.51	.00	.00
12	.56	1.0	1.6	5.9	2.2	2.7	2.2	1.6	1.2	.42	.00	.00
13	.45	1.0	1.5	6.3	1.9	2.0	2.4	1.5	1.1	.35	.00	.00
14	.38	1.1	1.2	5.2	1.7	2.9	2.3	2.2	1.1	.30	.00	.00
15	.33	2.6	1.2	4.4	1.6	2.9	2.5	2.7	1.1	.28	.00	.00
16	.33	6.0	1.1	4.9	1.5	2.3	2.2	3.0	1.0	.55	.00	.00
17	.29	3.0	4.2	8.9	2.2	2.0	2.2	2.4	.90	.94	.00	.00
18	.29	1.6	4.7	22	2.1	1.8	3.5	2.3	.82	.37	.00	.00
19	.29	.60	2.9	10	1.6	1.8	2.4	1.8	.80	.29	.00	.00
20	.29	.51	2.3	7.0	1.6	2.0	2.1	1.5	.70	.27	.00	.00
21	.29	.51	2.0	5.3	1.6	2.5	2.0	1.9	.73	.26	.00	1.0
22	.29	.51	2.0	4.4	2.2	3.2	1.8	1.6	.72	.26	.00	.26
23	.33	.66	3.7	3.8	1.9	5.0	1.7	2.3	.62	.23	.02	.51
24	.33	1.7	2.4	3.3	1.5	4.1	1.5	3.6	.63	.21	.53	.30
25	3.1	2.2	3.0	3.4	1.6	3.6	1.8	2.1	.60	.21	.08	.20
26	1.0	.97	4.5	2.7	2.2	4.1	5.7	1.8	.54	.20	.05	.18
27	.51	.78	3.8	2.5	2.1	5.0	2.8	1.5	.52	.18	.26	.16
28	1.0	.69	3.1	2.3	2.0	4.4	2.0	1.4	.50	.18	.36	.16
29	.80	.68	2.5	2.2	---	3.9	1.7	1.3	.53	.20	.37	.16
30	.50	.62	2.3	2.2	---	3.6	1.5	1.3	.48	.15	.26	.12
31	2.2	---	2.0	2.4	---	5.4	---	3.9	---	.12	.17	---
TOTAL	18.60	34.63	72.62	125.1	53.4	93.0	76.6	66.3	47.97	11.26	4.07	4.26
MEAN	.60	1.15	2.34	4.04	1.91	3.00	2.55	2.14	1.60	.36	.13	.14
MAX	3.1	6.0	5.0	22	2.4	5.4	5.7	3.9	7.2	.94	.53	1.0
MIN	.16	.44	.59	1.3	1.5	1.5	1.5	1.3	.48	.12	.00	.00
AC-FT	37	68	144	248	106	184	152	132	95	22	8.1	8.4

CAL YR 1976 TOTAL 846.07 MEAN 2.32 MAX 20 MIN .13 AC-FT 1680
WTR YR 1977 TOTAL 607.57 MEAN 1.66 MAX 22 MIN .00 AC-FT 1210

NOTE.--No gage-height record Oct. 1-14, Mar. 16-30, and July 28 to Aug. 16.

12197040 TANK CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1974 to current year.

INSTRUMENTATION.--Temperature recorder since Apr. 24, 1974.

REMARKS.--Interruptions in the record were due to malfunction of the instrument except Aug. 8-22 and Sept. 8-19, when there was no flow at the gage.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Sept. 2, 1974; minimum, 0.5°C Feb. 8, Nov. 30, 1975, Feb. 5, 6, Mar. 3, 4, 1976, Jan. 8, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 19.0°C Aug. 3, 5, 6; minimum, 0.5°C Jan. 8.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	12.0	12.5	---	---	---	2.5	1.5	2.0	4.0	3.0	3.5
2	12.0	11.5	11.5	---	---	---	3.0	2.0	2.5	3.5	3.0	3.5
3	11.5	10.5	11.0	---	---	---	3.5	3.0	3.0	4.0	3.5	4.0
4	11.5	9.0	10.0	---	---	---	4.0	3.5	3.5	4.0	2.0	3.0
5	11.0	10.5	10.5	---	---	---	4.5	3.5	4.0	2.0	1.5	1.5
6	13.5	10.5	11.5	---	---	---	5.5	4.5	5.0	2.0	1.5	1.5
7	13.5	9.5	11.5	---	---	---	6.5	5.5	6.0	2.0	1.0	1.5
8	14.0	11.0	12.0	---	---	---	7.5	7.0	7.0	2.0	0.5	1.5
9	13.5	11.5	12.5	---	---	---	7.0	6.0	6.5	1.5	1.0	1.0
10	13.0	12.5	12.5	---	---	---	7.0	6.5	6.5	2.0	1.0	1.5
11	13.5	12.0	12.5	---	---	---	7.0	6.5	7.0	3.5	2.0	2.5
12	13.0	11.0	12.0	---	---	---	7.0	6.5	6.5	3.5	3.0	3.0
13	12.0	9.5	10.5	---	---	---	7.0	6.5	6.5	4.5	3.5	4.0
14	11.0	8.5	9.5	---	---	---	7.5	6.5	7.0	5.0	4.0	4.5
15	10.0	6.5	8.0	---	---	---	9.0	7.5	8.5	5.5	5.0	5.5
16	9.5	6.5	8.0	---	---	---	9.0	8.5	9.0	6.0	5.5	5.5
17	8.5	5.5	7.0	---	---	---	8.5	8.0	8.5	7.5	6.0	7.0
18	9.0	5.0	6.5	---	---	---	8.0	6.5	7.0	7.5	6.5	7.5
19	8.5	5.0	6.5	---	---	---	6.5	5.5	6.0	7.0	6.0	6.5
20	8.5	5.0	6.5	---	---	---	6.5	6.0	6.0	6.5	5.5	5.5
21	8.0	4.5	6.0	---	---	---	6.5	6.5	6.5	6.5	4.5	6.0
22	6.0	4.5	5.5	---	---	---	7.0	6.5	7.0	4.5	3.5	4.0
23	7.0	6.0	6.5	---	---	---	6.5	5.5	6.5	4.0	3.0	3.5
24	8.5	7.0	7.5	7.5	7.0	7.0	5.5	5.0	5.5	3.0	2.0	2.5
25	---	---	---	7.5	5.0	6.5	6.5	5.0	5.5	3.0	1.5	2.5
26	---	---	---	5.0	3.0	3.5	7.5	6.5	7.5	3.0	1.5	2.5
27	---	---	---	3.0	2.0	2.5	7.5	6.5	7.0	3.0	1.0	2.0
28	---	---	---	2.5	1.5	2.0	6.5	5.5	6.0	2.5	1.0	1.5
29	---	---	---	2.5	1.5	2.0	7.0	5.0	6.0	3.0	2.0	2.5
30	---	---	---	2.5	1.5	2.0	5.0	4.0	4.5	3.0	2.0	2.5
31	---	---	---	---	---	---	4.0	3.5	3.5	4.5	3.0	4.5
MONTH	14.0	4.5	9.5	7.5	1.5	3.5	9.0	1.5	6.0	7.5	0.5	3.5

12197040 TANK CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	4.0	5.0	7.0	5.0	6.0	---	---	---	12.0	9.0	10.5
2	5.0	3.0	4.0	6.0	5.0	5.5	8.0	4.5	6.5	10.5	9.5	10.0
3	4.0	2.5	3.5	6.5	5.5	6.0	10.0	6.5	8.0	10.0	8.5	9.5
4	6.5	4.0	5.5	6.5	5.0	6.0	10.5	5.0	7.5	10.0	8.0	8.5
5	6.5	5.0	5.5	8.0	6.0	7.0	11.5	5.5	8.5	9.0	7.5	8.5
6	7.0	5.5	6.0	7.0	6.5	6.5	12.5	7.5	9.5	11.5	7.0	9.5
7	6.5	4.5	6.0	7.0	6.5	6.5	13.5	8.5	10.5	12.0	7.0	10.0
8	7.0	5.5	6.5	6.5	6.0	6.0	9.5	8.0	8.5	12.5	8.5	10.5
9	8.0	7.0	7.5	6.0	5.5	5.5	8.5	7.0	8.0	13.0	8.0	10.5
10	8.5	7.0	8.0	7.5	5.0	6.0	8.0	6.5	7.0	10.5	8.5	9.5
11	7.5	6.5	7.5	6.5	5.0	6.0	10.5	6.0	8.0	10.0	8.0	9.0
12	8.5	6.0	8.0	7.5	4.5	6.0	10.0	6.0	8.0	11.0	6.0	8.5
13	7.0	4.5	5.5	6.5	3.5	5.0	9.0	7.0	8.0	9.5	8.5	9.0
14	7.0	4.5	5.5	5.5	3.5	5.0	9.0	6.5	7.5	10.5	8.0	9.0
15	7.0	5.0	6.0	6.0	4.0	5.0	7.5	6.5	7.0	9.5	8.0	9.0
16	7.5	7.0	7.5	---	---	---	9.0	6.5	7.5	10.0	8.5	9.0
17	7.5	7.0	7.0	6.0	4.0	5.0	9.5	5.5	7.5	10.0	8.5	9.0
18	9.0	7.0	8.0	7.5	5.0	6.0	9.0	6.5	7.5	10.5	9.0	9.5
19	9.0	7.0	8.0	7.5	5.0	6.5	9.0	6.0	7.0	11.5	9.0	10.5
20	9.0	8.0	8.5	6.0	4.5	5.5	10.0	4.5	7.5	12.0	9.5	11.0
21	8.0	6.5	7.5	7.0	6.0	6.5	10.0	7.0	8.5	11.0	9.5	10.5
22	7.0	7.0	7.0	9.5	6.5	7.5	13.0	8.5	10.5	11.5	7.5	9.5
23	7.0	5.0	6.0	8.0	7.0	7.5	14.0	9.5	11.5	10.0	9.0	9.0
24	6.0	3.5	5.0	8.5	6.5	7.5	14.0	9.0	11.5	10.5	8.5	9.0
25	5.5	5.0	5.0	7.0	5.5	6.5	12.5	9.5	11.0	11.5	8.0	10.0
26	7.0	5.0	6.0	6.5	6.5	6.5	10.5	9.0	9.5	10.5	9.0	10.0
27	8.0	5.5	7.0	6.5	6.0	6.5	12.5	8.5	10.5	9.5	8.0	9.0
28	7.0	6.0	7.0	8.0	5.5	6.5	12.5	7.5	10.0	10.5	8.5	9.0
29	---	---	---	9.5	4.5	6.5	13.0	9.0	10.5	11.0	7.5	9.0
30	---	---	---	---	---	---	13.0	8.0	10.5	10.5	8.0	9.5
31	---	---	---	---	---	---	---	--	---	11.0	10.0	10.5
MONTH	9.0	2.5	6.5	9.5	3.5	6.0	14.0	4.5	8.5	13.0	6.0	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.5	9.5	10.0	12.5	11.0	11.5	18.0	13.5	16.0	14.5	10.5	12.5
2	11.0	9.0	10.0	12.5	11.0	11.5	18.5	13.5	16.0	13.0	12.5	13.0
3	10.5	9.0	9.5	11.5	10.5	10.5	19.0	14.0	16.5	14.5	13.0	13.5
4	11.5	10.0	10.5	12.5	9.0	11.0	18.5	15.0	17.0	15.0	13.5	14.5
5	14.0	10.5	12.0	12.5	10.0	11.0	19.0	15.0	17.0	15.5	13.0	14.0
6	15.0	11.0	13.0	13.0	9.5	11.0	19.0	16.0	17.5	14.5	10.5	12.5
7	14.0	11.5	12.5	14.5	9.5	12.0	18.5	15.0	17.0	13.5	11.0	12.5
8	12.5	10.5	11.5	15.0	10.5	12.5	---	---	---	---	---	---
9	12.5	8.5	10.5	12.5	11.5	12.0	---	---	---	---	---	---
10	13.5	8.5	11.0	14.5	11.5	12.5	---	---	---	---	---	---
11	13.5	10.0	12.0	12.5	12.0	12.5	---	---	---	---	---	---
12	13.5	10.0	12.0	13.0	11.5	12.0	---	---	---	---	---	---
13	13.5	10.0	11.5	13.5	11.5	12.5	---	---	---	---	---	---
14	13.0	9.5	11.5	15.5	10.5	13.0	---	---	---	---	---	---
15	12.5	10.5	11.5	14.5	11.5	13.0	---	---	---	---	---	---
16	13.5	10.5	11.5	12.5	11.5	12.0	---	---	---	---	---	---
17	15.0	10.5	13.0	12.0	11.5	12.0	---	---	---	---	---	---
18	14.5	11.5	13.0	13.5	9.5	11.5	---	---	---	---	---	---
19	13.5	10.5	12.0	14.0	9.5	12.0	---	---	---	---	---	---
20	13.0	11.0	12.0	15.5	10.0	12.5	---	---	---	13.0	11.5	12.5
21	14.0	12.0	12.5	15.0	12.0	13.5	---	---	---	12.0	10.5	11.0
22	14.0	11.5	13.0	15.5	10.5	13.0	---	---	---	12.0	8.5	10.0
23	14.0	9.5	12.0	16.0	10.5	13.0	15.0	13.0	14.0	11.0	10.0	10.5
24	13.0	11.5	12.0	17.0	12.0	14.5	14.0	13.0	13.5	11.0	10.0	10.5
25	14.0	11.5	12.5	16.0	12.5	14.5	13.0	12.5	12.5	11.5	9.0	10.5
26	13.5	9.5	11.5	16.5	12.5	14.5	14.0	12.5	13.0	13.0	10.0	11.0
27	14.0	11.0	12.5	16.5	12.0	14.0	14.5	12.5	13.5	12.5	9.0	10.5
28	14.0	11.0	12.0	14.5	13.0	13.5	13.5	13.0	13.0	11.0	10.0	10.5
29	14.0	11.0	12.0	15.5	12.5	14.0	14.0	12.5	13.0	11.5	10.5	11.0
30	14.5	10.0	12.5	17.5	13.0	15.0	14.5	11.5	12.5	12.0	10.5	11.0
31	---	---	---	18.0	13.0	15.5	14.5	10.0	12.5	---	---	---
MONTH	15.0	8.5	12.0	18.0	9.0	12.5	19.0	10.0	14.5	15.5	8.5	12.0
YEAR	19.0	0.5	8.5									

12197110 MINKLER CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'15", long 122°06'00", in N½SE¼ sec.13, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 1.8 mi (2.9 km) west of Lyman and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--About 5 mi² (13.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft (24 m) from topographic map.

REMARKS.--Records poor. No known diversion above station. Flow affected by natural storage in Minkler Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge 150 ft³/s (4.25 m³/s) Dec. 2, 1975; maximum gage height, 10.94 ft (3.335 m) Dec. 4, 1975, backwater from Skagit River; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 65 ft³/s (1.84 m³/s) Jan. 18; maximum gage height, 5.82 ft (1.774 m) Jan. 18, backwater from Skagit River; no flow many days.

REVISIONS.--The average daily discharge for Jan. 17, 1975 has been revised to 70 ft³/s (1.98 m³/s); the revised monthly and yearly summaries are given below. These figure supersede those published in the report for 1975.

Month	Total	Mean	Maximum	Minimum	Acre-feet
January 1975	640.6	20.7	82	9.3	1,270
WTR YR 1975	2,122.4	5.81	82	0	4,210

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.37	3.7	3.9	3.4	10	3.7	15	.16	.00	.00
2	.00	.00	.44	3.4	3.7	3.1	8.4	3.1	24	.13	.00	.00
3	.00	.00	.51	3.2	3.4	3.2	7.6	4.8	17	.10	.00	.00
4	.00	.00	.51	3.1	3.1	3.2	6.8	6.5	12	.10	.00	.00
5	.00	.00	.51	2.7	2.9	2.9	7.0	8.4	9.0	.07	.00	.00
6	.00	.00	.65	2.2	2.5	2.9	8.2	7.3	7.3	.05	.00	.00
7	.00	.00	2.0	2.1	2.2	3.9	9.0	5.7	5.7	.05	.00	.00
8	.00	.00	6.0	1.8	2.1	4.8	10	4.1	4.6	.03	.00	.00
9	.00	.00	10	1.7	2.0	5.5	9.7	3.2	3.6	.02	.00	.00
10	.00	.00	9.7	2.0	2.1	7.6	7.6	2.4	3.1	.02	.00	.00
11	.00	.00	7.9	2.1	2.4	5.5	7.0	2.7	2.4	.03	.00	.00
12	.00	.00	6.8	4.1	2.5	5.5	6.5	3.7	2.1	.05	.00	.00
13	.00	.00	5.7	6.0	2.7	4.8	6.2	3.1	1.5	.05	.00	.00
14	.00	.00	5.3	6.5	2.5	5.3	6.2	2.4	1.5	.03	.00	.00
15	.00	.00	4.4	7.3	2.2	5.3	5.7	3.2	1.2	.02	.00	.00
16	.00	.00	3.6	8.7	2.1	5.1	5.5	4.8	.95	.01	.00	.00
17	.00	.00	3.7	21	2.2	3.9	4.8	6.8	.85	.03	.00	.00
18	.00	.00	13	65	2.5	3.7	6.0	5.7	.75	.05	.00	.00
19	.00	.00	9.7	40	2.9	3.7	6.2	4.4	.65	.02	.00	.00
20	.00	.00	6.8	23	2.9	3.6	5.7	3.4	.58	.00	.00	.00
21	.00	.00	4.8	18	3.1	4.4	5.1	3.2	.51	.00	.00	.00
22	.00	.00	4.1	13	3.2	5.3	5.3	3.2	.44	.00	.00	.00
23	.00	.00	5.1	10	2.9	6.8	6.2	3.1	.37	.00	.00	.00
24	.00	.00	4.6	8.4	2.9	6.8	5.7	6.0	.37	.00	.00	.00
25	.00	.00	4.4	6.8	2.9	6.2	5.1	6.2	.32	.00	.00	.00
26	.00	.00	9.0	5.5	3.2	9.3	7.6	4.8	.19	.00	.00	.00
27	.00	.00	15	5.1	3.2	13	9.7	3.6	.19	.00	.00	.00
28	.00	.07	10	4.8	3.6	13	7.3	3.1	.16	.00	.00	.00
29	.00	.13	7.3	4.4	---	11	8.2	2.5	.19	.00	.00	.00
30	.00	.19	5.7	4.1	---	9.0	4.4	2.1	.16	.00	.00	.00
31	.00	---	4.6	4.1	---	9.0	---	4.8	---	.00	.00	---
TOTAL	.00	.39	171.79	293.8	77.8	180.7	208.7	132.0	116.68	1.02	.00	.00
MEAN	.000	.013	5.54	9.48	2.78	5.83	6.96	4.26	3.89	.033	.000	.000
MAX	.00	.19	15	65	3.9	13	10	8.4	24	.16	.00	.00
MIN	.00	.00	.37	1.7	2.0	2.9	4.4	2.1	.16	.00	.00	.00
AC-FT	.00	.8	341	583	154	358	414	262	231	2.0	.00	.00

CAL YR 1976 TOTAL 2384.74 MEAN 6.52 MAX 55 MIN .00 AC-FT 4730
WTR YR 1977 TOTAL 1182.88 MEAN 3.24 MAX 65 MIN .00 AC-FT 2350

NOTE.--Backwater from Skagit River Jan. 18-20.

12197110 MINKLER CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1974 to current year.

INSTRUMENTATION.--Temperature recorder since May 17, 1974.

REMARKS.--Record during period of no flow Oct. 1-Nov. 27 and July 20-Sept. 30 were not published.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C June 7, 1977; minimum, 1.0°C Nov. 30, 1975.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum 19.0°C June 7; minimum, 3.0°C Jan. 24-27.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1				---	---	---	6.0	5.5	5.5	5.5	5.0	5.0
2				---	---	---	6.0	5.5	5.5	5.5	5.0	5.0
3				---	---	---	6.0	5.5	5.5	5.0	5.0	5.0
4				---	---	---	5.5	5.5	5.5	5.5	5.0	5.0
5				---	---	---	5.5	5.0	5.5	5.5	5.0	5.5
6				---	---	---	6.0	5.0	5.5	6.0	5.5	6.0
7				---	---	---	6.5	6.0	6.5	6.5	6.0	6.5
8				---	---	---	5.5	5.0	5.5	7.0	6.5	6.5
9				---	---	---	6.0	5.5	5.5	7.0	7.0	7.0
10				---	---	---	5.5	5.5	5.5	7.0	7.0	7.0
11				---	---	---	6.0	5.5	6.0	7.0	7.0	7.0
12				---	---	---	5.5	5.5	5.5	6.5	4.0	5.5
13				---	---	---	5.5	5.5	5.5	4.5	3.5	4.0
14				---	---	---	6.0	5.5	5.5	4.5	4.0	4.0
15				---	---	---	6.5	6.0	6.5	4.5	4.0	4.0
16				---	---	---	8.0	6.5	7.5	4.5	4.0	4.0
17				---	---	---	8.0	8.0	8.0	6.5	4.0	5.0
18				---	---	---	7.5	6.5	7.5	7.0	6.5	7.0
19				---	---	---	6.5	5.5	6.0	8.5	6.0	6.0
20				---	---	---	5.5	5.5	5.5	6.0	5.0	5.5
21				---	---	---	6.0	5.5	5.5	5.5	5.0	5.0
22				---	---	---	6.0	6.0	6.0	5.0	4.0	4.5
23				---	---	---	6.0	5.5	6.0	4.0	4.0	4.0
24				---	---	---	5.5	5.5	5.5	4.0	3.0	3.5
25				---	---	---	5.5	5.5	5.5	3.5	3.0	3.0
26				---	---	---	6.0	5.5	6.0	3.5	3.0	3.5
27				---	---	---	6.5	6.0	6.5	3.5	3.0	3.5
28				5.5	5.0	5.0	6.0	5.5	6.0	4.0	3.5	3.5
29				5.5	5.0	5.5	6.0	5.5	5.5	4.0	3.5	3.5
30				6.0	5.0	5.5	5.5	5.0	5.0	4.0	3.5	3.5
31				---	---	---	5.0	4.5	5.0	4.0	4.0	4.0
MONTH				6.0	5.0	5.5	8.0	4.5	6.0	7.0	3.0	5.0

12197110 MINKLER CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	3.5	4.0	7.5	6.5	7.0	9.0	7.0	8.0	16.0	15.0	15.5
2	4.5	3.5	4.0	7.0	6.5	6.5	8.5	7.5	8.0	15.5	14.0	14.5
3	4.5	3.5	4.0	7.0	6.5	6.5	9.5	8.0	8.5	14.0	13.0	13.5
4	4.5	4.0	4.5	6.5	6.5	6.5	11.0	8.0	9.5	13.0	12.0	12.5
5	5.0	4.5	4.5	7.0	6.0	6.5	12.5	9.0	11.0	12.5	11.5	12.0
6	5.5	5.0	5.0	7.0	7.0	7.0	13.5	10.5	12.0	13.0	11.0	12.0
7	5.5	5.0	5.5	7.0	6.5	7.0	14.0	11.0	12.5	14.0	12.0	13.0
8	6.0	5.0	5.5	6.5	6.0	6.5	13.0	11.0	12.0	15.0	13.5	14.0
9	7.0	6.0	6.5	6.0	5.5	6.0	11.0	10.0	10.5	15.5	14.0	15.0
10	7.5	7.0	7.5	7.0	5.0	6.0	10.0	9.0	9.0	15.5	14.0	15.0
11	8.0	7.5	7.5	6.5	6.0	6.0	11.5	8.5	10.0	14.0	13.0	13.5
12	8.5	8.0	8.0	7.0	6.0	6.5	11.0	9.5	10.5	14.5	12.5	13.5
13	8.0	7.0	7.5	7.0	5.5	6.0	11.0	10.5	10.5	14.5	13.0	13.5
14	7.0	6.5	7.0	6.0	5.0	5.5	11.0	9.5	10.0	13.5	12.5	13.0
15	7.0	6.0	6.5	6.5	5.5	6.0	10.5	9.5	9.5	13.5	12.5	13.0
16	7.5	7.0	7.0	7.0	5.0	6.0	10.0	9.0	9.5	14.0	12.0	13.0
17	7.5	7.0	7.0	6.5	5.5	6.0	11.0	9.0	10.0	13.0	12.0	12.5
18	8.0	7.0	7.5	7.0	6.0	6.5	11.5	10.0	10.5	13.0	12.0	12.5
19	8.0	7.5	8.0	8.0	6.5	7.5	12.0	10.0	11.0	14.5	12.5	13.5
20	8.5	8.0	8.0	7.0	7.0	7.0	11.5	9.5	10.5	15.0	14.0	14.5
21	8.5	8.0	8.0	7.0	6.5	7.0	11.0	10.5	11.0	15.0	14.5	15.0
22	8.0	7.5	8.0	7.5	6.5	7.0	12.5	10.5	11.5	15.0	13.5	14.0
23	8.0	7.0	7.5	8.0	7.5	7.5	14.5	12.0	13.0	15.0	13.5	14.5
24	7.0	6.0	6.5	9.0	7.5	8.0	16.0	13.5	14.5	14.0	12.5	13.0
25	6.5	6.0	6.5	8.0	7.5	8.0	15.5	14.5	15.0	14.0	12.0	13.0
26	7.0	6.0	6.5	8.0	7.0	7.5	15.0	12.5	13.5	14.0	13.5	14.0
27	7.0	6.5	7.0	7.0	6.5	6.5	14.5	11.5	13.0	13.5	13.0	13.0
28	7.5	7.0	7.0	8.0	6.0	7.0	15.5	13.0	14.0	13.5	12.0	13.0
29	---	---	---	9.0	6.5	8.0	16.0	14.0	15.0	14.0	12.5	13.0
30	---	---	---	9.5	7.0	8.5	16.5	13.5	15.0	14.0	13.5	13.5
31	---	---	---	8.5	7.5	8.0	---	---	---	13.5	13.5	13.5
MONTH	8.5	3.5	6.5	9.5	5.0	7.0	16.5	7.0	11.5	16.0	11.0	13.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	12.0	12.5	10.5	10.0	10.5						
2	12.5	11.0	11.5	10.5	10.0	10.5						
3	12.5	12.0	12.0	10.0	10.0	10.0						
4	12.0	11.5	12.0	11.0	10.0	10.5						
5	15.0	12.0	13.5	11.0	10.0	10.5						
6	17.5	15.0	16.0	10.0	9.5	10.0						
7	19.0	17.5	18.0	10.0	9.5	10.0						
8*	18.5	16.5	17.0	10.5	9.5	10.0						
9	17.0	16.0	16.5	10.5	10.0	10.0						
10	17.5	16.0	17.0	10.5	10.0	10.0						
11	18.5	17.0	17.5	11.0	10.0	10.5						
12	18.0	17.0	17.5	11.0	10.5	10.5						
13	18.0	16.5	17.0	10.5	10.0	10.0						
14	17.5	16.5	17.0	11.0	10.0	10.5						
15	17.0	16.5	17.0	11.0	10.5	10.5						
16	17.0	16.0	16.5	10.5	10.0	10.5						
17	17.5	16.0	16.5	10.5	10.5	10.5						
18	17.5	16.0	16.5	11.0	10.5	10.5						
19	17.0	16.0	16.5	11.0	9.5	10.0						
20	16.0	15.0	15.5	---	---	---						
21	16.0	15.5	15.5	---	---	---						
22	15.5	15.0	15.0	---	---	---						
23	15.0	14.0	14.5	---	---	---						
24	14.5	14.0	14.0	---	---	---						
25	14.5	13.5	14.0	---	---	---						
26	13.0	10.5	12.0	---	---	---						
27	11.5	9.5	10.5	---	---	---						
28	10.5	9.5	10.0	---	---	---						
29	11.5	10.0	11.0	---	---	---						
30	11.5	10.0	10.5	---	---	---						
31	---	---	---	---	---	---						
MONTH	19.0	9.5	14.5	11.0	9.5	10.5						
YEAR	19.0	3.0	9.0									

12197680 BLACK CREEK NEAR MINKLER, WA

LOCATION.--Lat 48°32'34", long 122°06'50", in NW¼NW¼ sec.12, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on right bank 0.6 mi (1.0 km) upstream from former station "Black Creek near Lyman 12197690," 2.8 mi (4.5 km) northwest of Lyman, and 1.1 mi (1.8 km) above mouth.

DRAINAGE AREA.--About 0.5 mi^2 (1.3 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft (152 m) from topographic map.

REMARKS.--Water discharge records good. No known diversion or regulation above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107 ft^3/s (3.03 m^3/s) Nov. 24, 1975, gage height, 3.05 ft (0.930 m); minimum, 0.07 ft^3/s (0.002 m^3/s) part or all of each day Aug. 16-21, 1977; minimum gage height, 1.16 ft (0.354 m) Aug. 16, Oct. 2, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 93 ft^3/s (2.63 m^3/s) Jan. 18, gage height, 2.97 ft (0.905 m); minimum, 0.07 ft^3/s (0.002 m^3/s) part or all of each day Aug. 16-21, gage height, 1.75 ft (0.533 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	4.2	.70	1.5	1.0	1.9	2.8	1.3	13	.29	.13	.34
2	.63	1.9	.70	1.2	1.0	1.5	2.6	2.9	13	.29	.13	.40
3	.78	1.1	.63	1.1	.95	1.2	2.5	3.4	5.2	.40	.11	.46
4	.70	.86	.56	.95	.95	1.1	3.2	3.4	3.6	.34	.11	.70
5	.70	.86	.56	.78	.86	1.1	6.6	3.1	2.4	.29	.11	.61
6	.70	.95	2.8	.70	.86	2.2	8.7	2.4	1.7	.24	.11	.46
7	.63	1.1	11	.70	.86	2.2	11	1.7	1.4	.24	.11	.34
8	.56	1.1	6.2	.70	.78	2.3	8.4	1.4	1.3	.20	.11	.29
9	.56	1.1	5.1	.63	.78	2.3	4.5	1.1	1.1	.20	.09	.29
10	1.2	1.0	3.0	.63	.95	2.2	3.1	1.1	1.0	.20	.09	.24
11	1.5	1.0	3.0	.78	1.5	2.0	3.1	1.7	.90	.34	.09	.24
12	.95	.95	2.6	2.3	1.6	2.0	2.6	1.6	.80	.34	.09	.20
13	.78	.95	2.8	1.7	1.7	1.7	3.1	1.3	.70	.29	.09	.17
14	.63	1.1	2.2	2.0	1.1	1.6	2.4	1.6	.61	.24	.09	.17
15	.56	1.7	1.7	2.6	1.0	1.6	1.9	2.4	.61	.20	.09	.17
16	.50	4.2	1.6	5.5	.95	1.2	1.7	3.9	.61	.61	.09	.17
17	.50	7.0	7.0	20	1.1	1.2	1.7	2.6	.53	2.4	.07	.17
18	.44	2.3	8.2	44	1.7	1.1	1.7	2.1	.53	.61	.07	.17
19	.44	1.2	3.2	12	1.2	1.1	1.6	1.7	.46	.40	.07	.17
20	.39	1.0	2.3	5.5	1.1	1.2	1.6	1.4	.46	.34	.07	.53
21	.44	.86	2.0	4.0	1.0	1.9	1.9	1.7	.46	.29	.07	3.4
22	.44	.63	1.7	2.6	1.2	2.8	5.5	1.6	.46	.24	.09	.80
23	1.5	.50	2.0	2.3	1.2	5.1	5.2	1.7	.40	.24	.29	1.7
24	9.1	2.1	1.6	2.2	1.1	3.0	4.5	5.5	.40	.20	.61	2.1
25	6.2	5.8	2.0	1.9	1.1	2.6	3.6	3.1	.40	.20	.90	1.0
26	2.3	2.0	11	1.6	1.1	4.0	8.9	1.9	.34	.17	.80	.70
27	.95	1.5	8.2	1.5	1.5	4.8	4.2	1.6	.34	.17	.46	.53
28	2.6	1.0	3.2	1.2	2.0	3.2	2.6	1.3	.34	.16	1.9	.46
29	1.9	.95	2.3	1.1	---	2.8	1.9	1.1	.34	.20	1.7	.46
30	1.1	.78	2.0	1.1	---	2.5	1.6	1.1	.29	.17	.61	.40
31	4.5	---	1.6	1.0	---	3.0	---	7.4	---	.13	.40	---
TOTAL	44.57	51.69	103.45	125.77	32.14	68.4	114.7	70.1	53.68	10.68	9.75	17.84
MEAN	1.44	1.72	3.34	4.06	1.15	2.21	3.82	2.26	1.79	.34	.31	.59
MAX	9.1	7.0	11	44	2.0	5.1	11	7.4	13	2.4	1.9	3.4
MIN	.39	.50	.56	.63	.78	1.1	1.6	1.1	.29	.13	.07	.17
AC-FT	88	103	205	249	64	136	228	139	106	21	19	35

CAL YR 1976 TOTAL 1013.43 MEAN 2.77 MAX 42 MIN .19 AC-FT 2010
WTR YR 1977 TOTAL 702.77 MEAN 1.93 MAX 44 MIN .07 AC-FT 1390

12197680 BLACK CREEK NEAR MINKLER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1975 to current year.

INSTRUMENTATION.--Temperature recorder installed May 16, 1975.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument or station vandalism.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum recorded, 17.5°C Sept. 18, 1976; minimum recorded, 0.0°C Feb. 5, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 15.5°C July 31, Aug. 1, 2; minimum, 0.5°C Jan. 5, 6, 7, 9.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	---	---	---	5.0	4.0	4.5	4.0	3.5	3.5
2	---	---	---	---	---	---	4.0	3.5	4.0	3.5	2.5	3.0
3	---	---	---	---	---	---	3.5	3.0	3.5	3.5	2.5	3.0
4	---	---	---	---	---	---	3.5	3.0	3.5	2.5	1.5	2.0
5	---	---	---	---	---	---	4.0	3.0	3.5	1.0	0.5	1.0
6	---	---	---	---	---	---	5.5	4.0	4.5	1.5	0.5	1.0
7	---	---	---	---	---	---	6.5	5.5	6.0	1.5	0.5	1.0
8	---	---	---	---	---	---	7.0	5.5	6.5	1.5	1.0	1.5
9	---	---	---	---	---	---	5.5	4.5	5.0	1.5	0.5	1.0
10	---	---	---	---	---	---	6.0	5.0	5.5	2.0	1.0	1.5
11	---	---	---	---	---	---	6.5	6.0	6.0	3.5	1.5	2.5
12	---	---	---	---	---	---	6.5	5.5	6.0	3.5	3.0	3.0
13	---	---	---	---	---	---	7.0	5.0	6.0	4.0	3.0	3.5
14	---	---	---	---	---	---	7.0	6.0	6.5	5.0	3.5	4.0
15	10.0	8.5	9.5	---	---	---	8.5	6.5	8.0	---	---	---
16	9.5	8.5	9.0	---	---	---	9.0	8.0	8.5	---	---	---
17	9.0	7.5	8.0	---	---	---	8.5	6.0	7.5	---	---	---
18	9.0	8.0	8.5	---	---	---	6.0	4.5	5.5	---	---	---
19	---	---	---	---	---	---	6.0	4.5	5.5	---	---	---
20	---	---	---	---	---	---	6.0	5.0	5.5	---	---	---
21	---	---	---	---	---	---	6.0	5.0	6.0	---	---	---
22	---	---	---	---	---	---	6.5	5.5	6.0	---	---	---
23	---	---	---	---	---	---	6.0	4.5	5.0	---	---	---
24	---	---	---	---	---	---	4.5	4.0	4.5	---	---	---
25	---	---	---	7.0	3.5	5.0	6.0	4.5	5.0	---	---	---
26	---	---	---	4.0	2.5	3.0	6.5	6.0	6.5	---	---	---
27	---	---	---	3.0	2.0	2.5	6.0	5.0	5.5	---	---	---
28	---	---	---	3.0	2.0	2.5	5.5	5.0	5.5	---	---	---
29	---	---	---	4.0	3.0	3.5	6.0	5.0	6.0	---	---	---
30	---	---	---	4.5	3.5	4.0	5.5	4.5	5.0	---	---	---
31	---	---	---	---	---	---	5.0	4.0	4.5	---	---	---
MONTH	10.0	7.5	9.0	7.0	2.0	3.5	9.0	3.0	5.5	5.0	0.5	2.5

NOTE.--No record Jan. 15 to July 7.

12197680 BLACK CREEK NEAR MINKLER, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1				---	---	---	15.5	13.5	14.5			
2				---	---	---	15.5	14.0	14.5			
3				---	---	---	---	---	---			
4				---	---	---	---	---	---			
5				---	---	---	---	---	---			
6				---	---	---	---	---	---			
7				---	---	---	---	---	---			
8				13.0	11.0	12.0	---	---	---			
9				11.5	11.0	11.0	---	---	---			
10				12.5	10.5	11.5	---	---	---			
11				12.0	11.5	11.5	---	---	---			
12				11.5	10.5	11.0	---	---	---			
13				12.0	11.0	11.5	---	---	---			
14				13.5	11.0	12.0	---	---	---			
15				13.0	11.5	12.0	---	---	---			
16				12.0	11.5	11.5	---	---	---			
17				11.5	10.0	10.5	---	---	---			
18				11.0	8.5	10.0	---	---	---			
19				12.0	9.5	10.5	---	---	---			
20				13.0	11.0	12.0	---	---	---			
21				13.0	11.5	12.0	---	---	---			
22				13.5	11.0	12.0	---	---	---			
23				14.0	11.5	12.5	---	---	---			
24				14.5	12.5	13.5	---	---	---			
25				14.0	13.0	13.5	---	---	---			
26				14.0	12.0	13.0	---	---	---			
27				14.0	12.5	13.5	---	---	---			
28				13.5	12.5	13.0	---	---	---			
29				13.5	12.0	13.0	---	---	---			
30				14.5	12.5	13.5	---	---	---			
31				15.5	13.5	14.0	---	---	---			
MONTH				15.5	8.5	12.0	---	---	---			
YEAR	15.5	0.5	7.0									

SKAGIT RIVER BASIN

12197700 WISEMAN CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'49", long 122°08'08", in SW¼SW¼ sec.11, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 200 ft (61 m) upstream from State Highway 20 crossing, and 3.4 mi (5.5 km) west of Lyman.

DRAINAGE AREA.--About 3 mi² (7.8 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

REVISED RECORDS.--WDR WA-76-1: 1974 (M), 1975.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30.5 m) from topographic map.

REMARKS.--Water discharge records good. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 462 ft³/s (13.1 m³/s) Dec. 2, 1975, gage height, 4.23 ft (1.289 m); minimum, 0.65 ft³/s (0.018 m³/s) Sept. 25, 1974, Aug. 17, 18, 1977; minimum gage height, 1.55 ft (0.472 m) Aug. 17, 18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 201 ft³/s (5.69 m³/s) Jan. 18, gage height, 3.44 ft (1.049 m); minimum, 0.65 ft³/s (0.018 m³/s) Aug. 17, 18, gage height, 1.55 ft (0.472 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	17	5.6	9.6	8.9	10	16	11	34	2.6	1.3	1.9
2	3.5	8.8	5.1	9.2	8.2	8.9	15	15	35	2.6	1.2	2.4
3	3.7	6.2	4.8	8.6	8.2	8.9	14	16	21	3.5	1.2	2.9
4	3.1	5.1	4.5	7.6	7.8	8.2	18	17	17	3.7	1.1	3.6
5	2.9	4.8	4.5	6.8	7.5	7.8	27	16	13	2.6	1.1	2.6
6	2.7	4.3	11	6.5	7.3	14	31	14	11	2.6	1.0	1.8
7	2.6	4.1	31	6.2	7.0	13	33	11	10	2.2	1.0	1.6
8	2.2	3.9	21	5.9	6.8	13	28	10	9.2	2.1	1.0	1.5
9	2.2	3.7	19	5.7	6.8	13	20	9.2	8.5	2.1	1.0	1.4
10	6.7	3.5	14	5.4	7.8	14	17	9.9	7.8	2.1	.90	1.3
11	6.7	3.2	16	6.2	8.9	11	17	12	7.1	3.2	.90	1.2
12	4.1	3.0	12	15	9.3	11	15	10	6.5	2.8	.80	1.2
13	3.4	2.8	13	11	9.3	9.9	16	9.6	6.2	2.2	.75	1.1
14	3.1	2.8	11	12	7.8	9.9	14	11	6.0	2.1	.75	1.1
15	2.9	4.5	9.6	15	7.3	9.2	13	13	5.7	1.9	.75	1.1
16	2.7	11	8.4	22	7.0	8.8	12	18	5.4	6.0	.75	1.1
17	2.7	19	24	47	8.2	8.5	11	16	4.8	14	.70	1.1
18	2.6	11	30	85	9.6	8.5	12	12	4.5	4.5	.70	1.0
19	2.6	7.5	16	34	7.8	8.1	11	10	4.3	3.2	.70	1.2
20	2.4	6.0	14	24	7.5	8.8	11	9.6	4.3	2.4	.70	2.9
21	2.4	5.7	11	19	7.5	11	12	11	4.3	2.4	.75	11
22	2.4	5.1	11	16	8.6	16	20	9.9	4.1	2.1	.80	3.7
23	2.4	4.8	12	14	8.6	20	20	11	3.7	1.9	2.6	6.4
24	3.1	9.2	10	13	8.2	15	19	22	3.5	1.8	5.1	8.1
25	19	20	13	11	7.8	13	18	15	3.5	1.6	8.3	4.4
26	10	9.9	32	11	7.8	17	30	12	3.2	1.6	6.1	3.2
27	4.8	7.8	27	10	9.6	22	20	10	3.0	1.6	2.9	2.6
28	12	6.8	18	9.8	12	17	16	9.6	3.2	1.7	6.9	2.5
29	8.5	6.2	14	9.6	---	15	13	8.8	3.0	1.9	7.6	2.4
30	5.4	5.7	12	9.3	---	14	11	8.5	2.8	1.5	3.6	2.1
31	17	---	11	9.3	---	16	---	26	---	1.4	2.4	---
TOTAL	151.7	213.4	445.5	474.6	229.1	380.5	530	389.9	255.6	87.9	64.95	80.2
MEAN	4.89	7.11	14.4	15.3	8.18	12.3	17.7	12.6	8.52	2.84	2.10	2.67
MAX	19	20	32	85	12	22	33	26	35	14	8.3	11
MIN	2.1	2.8	4.5	5.4	6.8	7.8	11	8.5	2.8	1.4	.70	1.0
AC-FT	301	423	884	941	454	755	1050	773	507	174	129	159

CAL YR 1976 TOTAL 5023.60 MEAN 13.7 MAX 105 MIN 2.1 AC-FT 9960
WTR YR 1977 TOTAL 3303.35 MEAN 9.05 MAX 85 MIN .70 AC-FT 6550

12197700 WISEMAN CREEK NEAR LYMAN, WA--Continued

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1974 to current year.

INSTRUMENTATION.--Temperature recorder installed April 24, 1974.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 16.5°C Aug. 12, 13, 17, 1977; minimum, 1.0°C Jan. 11, 1975, Mar. 3, 4, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 16.5°C Aug. 12, 13, 17; minimum, 1.5°C Jan. 7.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	11.5	12.0	---	---	---	---	---	---	4.5	3.5	4.0
2	11.5	11.0	11.5	---	---	---	---	---	---	4.0	3.5	4.0
3	11.0	10.0	10.5	---	---	---	---	---	---	4.0	3.5	4.0
4	10.5	9.5	10.0	---	---	---	---	---	---	3.5	2.0	3.0
5	10.5	10.0	10.5	---	---	---	---	---	---	2.5	2.0	2.0
6	11.5	10.0	10.5	---	---	---	---	---	---	3.0	2.0	2.5
7	11.5	10.0	11.0	---	---	---	---	---	---	2.5	1.5	2.0
8	12.0	10.5	11.5	---	---	---	---	---	---	2.5	2.0	2.0
9	12.0	11.5	12.0	---	---	---	---	---	---	2.5	2.0	2.0
10	12.0	11.5	12.0	---	---	---	---	---	---	3.0	2.0	2.5
11	12.0	11.5	12.0	---	---	---	---	---	---	4.0	3.0	3.5
12	11.5	10.5	11.0	---	---	---	---	---	---	4.0	3.5	4.0
13	11.0	9.5	10.5	---	---	---	---	---	---	5.0	4.0	4.5
14	10.0	9.0	9.5	---	---	---	---	---	---	5.5	4.5	5.0
15	9.5	8.0	8.5	---	---	---	8.5	7.0	8.0	6.0	5.0	5.5
16	9.0	8.0	8.5	---	---	---	8.5	8.0	8.0	6.0	5.0	5.5
17	8.5	6.5	7.5	---	---	---	8.5	6.0	8.0	7.5	6.0	6.5
18	8.5	6.5	7.5	---	---	---	6.5	5.0	6.0	7.0	6.5	7.0
19	8.5	6.5	7.5	---	---	---	6.0	5.0	5.5	6.5	6.5	6.5
20	8.5	7.0	7.5	---	---	---	6.5	5.5	6.0	6.5	5.5	6.0
21	8.0	6.5	7.5	---	---	---	6.5	6.0	6.0	6.5	6.0	6.5
22	7.5	6.0	7.0	---	---	---	6.5	6.0	6.5	6.0	4.5	5.0
23	7.5	7.0	7.5	---	---	---	6.5	5.0	5.5	6.0	4.0	4.5
24	8.5	7.5	8.0	---	---	---	5.0	4.5	5.0	4.5	4.0	4.0
25	8.5	8.0	8.5	7.0	4.0	5.5	6.5	5.0	6.0	4.5	3.5	4.0
26	---	---	---	---	---	---	7.0	6.5	7.0	4.5	3.5	4.0
27	---	---	---	---	---	---	6.5	5.5	6.0	4.0	3.5	3.5
28	---	---	---	---	---	---	6.0	5.0	5.5	3.5	3.0	3.5
29	---	---	---	---	---	---	6.5	5.5	6.0	3.5	3.5	3.5
30	---	---	---	---	---	---	5.5	4.5	5.0	3.5	3.0	3.0
31	---	---	---	---	---	---	5.0	4.0	4.5	5.0	3.5	4.5
MONTH	12.5	6.0	9.5	---	---	---	8.5	4.0	6.0	7.5	1.5	4.0

12197700 WISEMAN CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	5.0	5.5	6.0	5.5	6.0	---	---	---	10.5	9.0	10.0
2	6.0	5.0	5.5	6.0	5.0	5.5	6.5	4.5	5.5	10.0	9.0	9.5
3	5.5	4.5	5.0	6.0	5.5	5.5	8.0	6.0	6.5	9.0	7.5	8.5
4	6.5	5.0	6.0	6.0	5.5	5.5	8.5	5.0	6.5	7.5	6.5	7.0
5	6.5	6.0	6.5	7.0	6.0	6.5	9.0	5.5	7.0	7.0	6.0	6.5
6	7.0	6.5	7.0	6.5	6.0	6.5	9.0	6.0	7.5	9.0	6.0	7.5
7	7.0	6.0	6.5	6.5	6.0	6.0	9.0	7.0	8.0	10.0	7.0	8.5
8	7.0	6.5	7.0	6.5	6.0	6.0	---	---	---	10.5	8.5	9.0
9	8.0	7.0	7.5	6.0	5.5	5.5	---	---	---	11.0	8.0	9.5
10	8.0	7.5	8.0	6.0	5.0	5.5	---	---	---	10.0	8.0	9.0
11	7.5	7.0	7.5	6.0	5.5	5.5	---	---	---	8.0	7.0	7.5
12	8.5	7.5	8.0	6.5	5.5	6.0	---	---	---	9.0	6.0	7.5
13	8.0	6.5	7.0	5.5	4.5	5.0	---	---	---	8.5	8.0	8.0
14	6.5	5.5	6.0	5.5	4.5	5.0	---	---	---	8.5	7.0	8.0
15	7.0	6.0	6.5	5.5	5.0	5.5	---	---	---	8.0	7.0	7.5
16	7.5	7.0	7.5	5.5	4.5	5.0	---	---	---	8.0	7.0	7.5
17	7.5	7.5	7.5	5.0	4.5	5.0	---	---	---	8.0	7.5	8.0
18	8.0	7.0	7.5	6.0	4.5	5.0	---	---	---	8.5	7.5	8.0
19	8.5	7.5	8.0	6.0	4.5	5.0	---	---	---	10.0	8.0	9.0
20	9.0	8.5	8.5	5.0	4.5	5.0	---	---	---	10.5	8.5	9.5
21	8.5	7.5	8.0	5.5	5.0	5.0	7.5	6.0	7.0	9.5	8.5	9.0
22	7.5	7.0	7.0	6.5	5.0	5.5	10.0	7.0	8.5	10.0	7.5	8.5
23	6.5	5.5	6.0	6.0	5.0	5.5	11.0	8.0	9.0	9.0	7.5	8.0
24	5.5	4.5	5.0	6.0	5.0	5.5	11.5	8.5	9.5	8.5	7.0	7.5
25	5.5	5.5	5.5	5.5	4.5	5.0	10.5	9.0	9.5	9.5	7.5	8.5
26	6.0	5.0	5.5	5.0	5.0	5.0	9.0	7.5	8.0	9.0	8.0	8.5
27	7.0	5.5	6.0	5.0	4.0	4.5	10.0	7.0	8.5	8.0	7.0	7.5
28	6.5	6.0	6.5	5.5	4.5	5.0	10.5	7.5	9.0	8.5	7.5	8.0
29	---	---	---	6.5	4.0	5.0	11.0	8.5	9.5	9.0	7.0	8.0
30	---	---	---	---	---	---	11.0	8.0	9.5	9.0	7.5	8.5
31	---	---	---	---	---	---	---	---	---	9.5	8.5	9.0
MONTH	9.0	4.5	6.5	7.0	4.0	5.5	11.5	4.5	8.0	11.0	6.0	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	7.5	8.5	11.5	11.0	11.0	15.0	12.5	14.0	12.5	11.0	11.5
2	9.0	7.0	8.0	11.5	10.5	11.0	15.0	13.0	14.0	12.5	12.0	12.0
3	9.0	8.0	8.5	10.5	10.0	10.5	15.5	13.5	14.5	13.0	12.0	12.5
4	10.0	9.0	9.5	11.0	9.5	10.0	15.5	13.5	14.5	13.5	12.5	13.0
5	12.0	9.5	10.5	11.0	9.5	10.5	16.0	13.5	14.5	13.5	12.5	13.0
6	13.5	11.0	12.0	11.5	9.5	10.5	16.0	14.0	15.0	12.5	11.0	12.0
7	12.5	11.0	12.0	12.5	9.5	11.0	15.5	13.5	14.5	12.5	11.5	12.0
8	11.0	9.5	10.5	12.5	10.5	11.5	15.5	13.0	14.0	12.5	11.5	12.0
9	11.0	8.5	10.0	11.5	11.0	11.0	15.5	13.0	14.5	12.0	10.5	11.5
10	11.5	9.0	10.5	12.5	10.5	11.5	16.0	14.0	15.0	12.0	10.5	11.5
11	12.0	10.0	11.0	11.5	11.5	11.5	16.0	14.0	15.0	12.5	10.5	11.5
12	12.0	10.0	11.0	11.5	11.0	11.0	16.5	14.5	15.5	12.5	11.0	12.0
13	12.0	10.0	11.0	12.0	11.0	11.5	16.5	14.0	15.0	13.0	11.5	12.0
14	11.5	10.0	10.5	13.0	10.5	12.0	15.5	14.0	14.5	13.0	12.0	12.5
15	11.0	10.5	10.5	12.5	11.5	12.0	15.5	13.5	14.5	12.0	11.5	12.0
16	11.5	10.0	11.0	12.0	11.0	11.5	16.0	13.5	15.0	12.0	11.0	11.5
17	13.0	10.5	11.5	11.5	10.5	11.0	16.5	14.0	15.0	12.0	11.0	11.5
18	13.0	11.5	12.0	11.5	9.0	10.5	15.5	14.0	14.5	12.0	11.5	11.5
19	12.0	10.5	11.0	12.0	9.5	11.0	15.5	13.5	14.5	12.5	12.0	12.0
20	11.5	10.5	11.0	13.0	10.5	11.5	15.5	13.5	14.0	12.0	11.0	11.5
21	12.5	11.0	11.5	13.0	11.5	12.0	14.0	13.5	13.5	11.0	9.5	10.0
22	12.5	11.0	11.5	13.0	11.0	12.0	14.0	13.0	13.5	10.5	9.0	10.0
23	12.5	10.0	11.0	13.5	11.0	12.0	13.5	13.0	13.0	10.5	9.5	10.0
24	12.0	11.0	11.5	14.0	12.0	13.0	13.0	12.5	13.0	10.0	9.0	9.5
25	12.5	11.0	11.5	13.5	12.0	13.0	12.5	12.0	12.0	10.0	9.0	9.5
26	12.0	10.0	11.0	14.0	12.0	13.0	13.0	12.0	12.5	11.0	9.5	10.0
27	12.5	11.0	11.5	14.0	12.0	13.0	13.0	12.0	12.5	10.5	9.0	10.0
28	12.0	11.0	11.0	13.0	12.5	12.5	13.0	12.0	12.5	10.5	10.0	10.5
29	12.5	10.5	11.5	13.5	12.0	12.5	12.5	12.0	12.0	10.5	10.0	10.5
30	12.5	10.0	11.5	14.0	12.0	13.0	12.5	11.0	12.0	11.0	10.0	10.5
31	---	---	---	15.0	12.5	13.5	12.5	10.5	11.5	---	---	---
MONTH	13.5	7.0	11.0	15.0	9.0	11.5	16.5	10.5	14.0	13.5	9.0	11.5
YEAR	16.5	1.5	9.0									

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA

LOCATION.--Lat 48°29'03", long 122°14'31", in NW¼NW¼ sec.36, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110007, in left bank pier of bridge on State Highway No. 9, 1.0 mi (1.6 km) south of Sedro Woolley, and at mile 22.5 (35.9 km).

DRAINAGE AREA.--3,015 mi² (7,809 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1908-1924, February 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 15.46 ft (4.712 m) above mean sea level. May 1, 1908 to Dec. 31, 1923 nonrecording gage at site 200 ft (61 m) upstream at datum 24.4 ft (7.44 m) lower.

REMARKS.--Water-discharge records good except those during period Oct. 5 to Nov. 16, which are fair. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs (see sta 12176500 and 12177700), Baker Lake (12191600) and Lake Shannon (12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--18 years (water years 1909-24, 1976-77) 16,290 ft³/s (461 m³/s); 11,800,000 acre-ft/yr (14,500 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge observed, 220,000 ft³/s (6,230 m³/s) Nov. 30, 1909, gage height, 36.5 ft (17.22 m) datum then in use, from rating curve extended above 62,000 ft³/s (1,760 m³/s); minimum observed, 2,830 ft³/s (80.1 m³/s) Sept 29-30, Oct. 10-11, 1915.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of approximately 39.1 ft (11.92 m), present datum (corrected), discharge about 400,000 ft³/s (11,300 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft³/s (1,420 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	2215	*57,700	1,630	*18.16	5.535

Minimum daily discharge, 4,700 ft³/s (133 m³/s) Oct. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9630	11900	13400	12200	11400	12200	12400	18000	16100	8900	9270	7010
2	10100	9900	13100	12400	10900	12100	10700	19300	16100	10600	7970	7250
3	10100	8900	12800	14500	11200	12500	10200	20700	13200	10100	8880	10400
4	9830	8600	11600	12700	11300	11000	10300	18800	13000	9390	8850	10300
5	6700	7200	12700	16500	10100	11200	11100	16400	15500	8770	9180	10600
6	5600	7400	12200	19300	9260	12200	13200	14800	17100	8660	9670	8950
7	5600	6700	12200	12100	9230	15000	16400	14100	21300	7500	9820	7870
8	7800	6200	15300	13000	9350	18500	18700	14000	22600	7490	8660	6990
9	8020	7300	16500	11800	8670	19000	17300	13000	16500	7650	8510	6180
10	7080	6900	12900	13000	9320	17800	15200	11300	13900	7570	8530	5810
11	9860	8000	12700	11800	13800	14500	13900	12000	14200	8120	9270	5920
12	9420	9000	13800	13600	13500	14100	13900	10600	13800	9110	8610	6150
13	8370	7900	12000	11600	18900	16300	14300	9810	14100	9390	8790	6040
14	6660	7500	11600	11000	14300	16100	14700	9740	13800	8330	9360	6810
15	7080	7400	11900	11100	13400	15900	14600	9840	13300	7600	9650	6900
16	6000	10000	12400	10900	12600	14600	13800	9970	12700	8150	9500	5000
17	5400	15400	13300	17800	12400	12100	12300	11700	13000	11600	8850	5200
18	5700	18500	15000	46600	13500	11500	12200	9050	14000	11600	8830	5100
19	5400	13600	11400	33500	10800	11100	12700	8880	14500	8990	8320	5600
20	5600	12300	11900	24100	10400	12100	12600	9070	13600	7800	8090	6900
21	4700	11800	10800	19300	10600	13000	11800	10300	11500	7700	7770	11400
22	6300	9800	10200	18000	12100	14100	11400	12000	11200	8490	7220	8090
23	6500	9900	10000	16500	12400	13700	13500	12400	11400	8300	7410	6650
24	5100	10900	9380	15600	11700	14400	17900	12800	10500	8030	9500	8630
25	5600	14500	8800	14000	10800	13000	23800	10500	12000	8530	11900	7910
26	7600	12400	20600	14000	10800	12100	25500	10900	12700	8570	11500	6500
27	5400	11500	25900	14000	11100	13800	20900	11300	10800	9210	9210	5430
28	5000	11000	18200	13000	12300	13000	18100	11800	10700	9120	8240	5100
29	6800	12400	17200	12600	---	13700	17800	9700	10700	10400	14000	6500
30	6600	12700	12800	12400	---	13500	17500	8280	10300	8960	11400	6510
31	7980	---	11700	12400	---	12700	---	9240	---	9090	8990	---
TOTAL	219270	307580	413300	492300	326130	426800	448700	380080	414100	274540	286040	213500
MEAN	7073	10250	13330	15880	11650	13770	14960	12260	13800	8856	9227	7117
MAX	10100	18500	25900	46600	18900	19000	25500	20700	22600	11600	14000	11400
MIN	4700	6200	8800	10900	8670	11000	10200	8280	10300	7490	7220	5000
AC-FT	434900	609900	819800	976500	646900	846600	890000	753900	821400	544600	567400	423500

CAL YR 1976 TOTAL 6484350 MEAN 17720 MAX 38900 MIN 4700 AC-FT 12860000
WTR YR 1977 TOTAL 4202180 MEAN 11510 MAX 46600 MIN 4700 AC-FT 8335000

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974, October 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
pH: June 1977 to September 1977.
WATER TEMPERATURE: October 1975 to current year.
DISSOLVED OXYGEN: October 1975 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1975.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. In addition to water-quality monitor record, field checks were taken approximately twice weekly by the observer, which are included in this report.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, specific conductance, and coliform data for water-quality samples listed below furnished by Washington State Department of Ecology.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 67 micromhos Mar. 22, 1977; minimum recorded, 21 micromhos July 31, 1976.
WATER TEMPERATURES: Maximum recorded, 15.5°C July 8, 15, Sept. 12, 13, 1977; minimum recorded, 3.0°C Jan. 1, 2, 1976.
DISSOLVED OXYGEN: Maximum recorded, 13.3 mg/l Dec. 5, 8, 1975, Mar. 21, 1977; minimum observed, 9.7 mg/l Aug. 18, 1977.

EXTREMES OUTSIDE PERIOD OF DAILY RECORD.--A specific conductance of 77 micromhos was observed Feb. 11, 1974. A pH of 8.6 units was observed Mar. 24, 1976. A temperature of 14.9°C was observed on Aug. 26, 1974.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 67 micromhos Mar. 22; minimum recorded, 35 micromhos Sept. 5.
pH: Maximum recorded, 7.8 units July 15, 21, 22; minimum recorded, 7.0 units July 19.
WATER TEMPERATURES: Maximum recorded, 15.5°C July 8, 15, Sept. 12, 13; minimum recorded, 4.5°C Dec. 25, Feb. 25, 26, Mar. 9, 10, 14.
DISSOLVED OXYGEN: Maximum recorded, 13.3 mg/L Mar. 21; minimum observed, 9.7 mg/L Aug. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
12...	1350	7830	--	7.2	12.3	17	5	11.1	.01	.03	.01	.00
25...	1425	*5400	58	7.4	10.2	44	4	11.1	.07	.06	.02	.00
NOV												
09...	1600	*7400	65	7.3	10.3	8	2	11.1	.02	.02	.01	.00
17...	1345	13600	67	7.3	9.4	62	8	11.2	.11	.06	.03	.00
DEC												
07...	1340	11000	66	7.5	--	30	5	12.1	.13	.07	.02	.00
21...	1225	10900	66	7.4	6.1	13	2	12.6	.17	.04	.01	.01
JAN												
12...	1635	13800	61	7.3	4.6	13	10	12.1	.16	.06	.02	.00
25...	1255	14500	73	7.1	4.3	8	5	12.9	.17	.04	.01	.00
FEB												
02...	1250	10500	76	7.5	5.7	13	2	12.2	.16	.05	.01	.00
22...	1345	11100	66	7.1	6.0	25	5	11.7	.15	.03	.02	.00
MAR												
15...	1320	16100	66	7.5	--	13	2	12.5	.15	.06	.01	.00
30...	1435	12000	72	7.5	7.5	9	1	12.0	.16	.02	.01	.00
APR												
12...	1245	13700	67	7.2	8.6	8	4	12.1	.13	.03	.01	.00
26...	1620	25900	45	7.0	7.7	33	20	11.5	.13	.04	.09	.00
MAY												
10...	1410	11600	57	7.2	10.7	13	2	10.8	.11	.02	.01	.00
26...	1230	12100	53	7.4	8.9	17	2	11.6	.12	.06	.02	.00
JUN												
14...	1425	14600	62	7.4	13.2	8	5	10.7	.05	.04	.01	.00
28...	1320	9340	67	7.1	--	17	5	10.9	.07	.05	.01	.00
JUL												
06...	1410	8970	56	7.1	13.7	8	3	11.3	.05	.04	.01	.00
19...	1620	8770	51	7.5	16.0	8	6	11.1	.03	.03	.01	.00
AUG												
02...	1635	8160	50	7.1	19.5	17	50	9.7	.07	.23	.11	.01
16...	1630	7770	45	7.2	18.1	21	45	[illegible]	.05	.13	.14	.00
SEP												
07...	1455	8160	--	--	16.6	21	10	10.7	.07	.05	.06	.00
20...	1510	8300	55	7.3	11.9	17	4	10.7	.05	.02	.03	.00

* Mean daily discharge.

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Time	Instantaneous discharge (cfs)	Specific conductance (micro-mhos)	Ph (Units)	Temperature (Deg. C)	Dissolved oxygen (mg/l)
Oct.						
18	1700	5,700	---	7.1	---	---
Nov.						
3	1645	8,000	48	7.1	9.2	12.2
7	1600	6,600	55	7.2	9.2	12.1
10	1630	7,600	53	7.2	9.7	11.8
14	1000	7,600	50	7.1	7.9	11.6
18	1800	14,700	40	7.2	8.6	11.1
21	1630	10,800	47	7.2	7.8	11.7
24	1500	10,800	50	7.1	9.2	12.1
28	0900	12,800	52	7.0	4.5	12.5
Dec.						
1	1800	13,300	58	7.2	6.8	12.3
5	1600	12,600	57	7.2	7.2	12.2
8	1000	14,600	58	7.0	6.3	12.0
12	1000	12,600	56	7.1	6.8	11.9
15	1100	10,800	56	7.1	7.2	11.7
20	0800	10,900	59	7.0	5.8	12.2
22	1800	10,900	58	7.2	6.5	12.1
28	0700	14,600	55	7.3	6.8	12.0
29	0700	17,400	57	7.2	6.2	12.3
Jan.						
2	1600	10,800	61	7.2	5.1	12.4
5	1700	17,400	55	7.1	4.5	12.0
9	1700	10,600	53	7.0	4.3	12.6
12	1400	12,900	55	7.1	3.6	12.1
16	0800	10,900	56	7.2	5.0	11.8
23	1600	17,000	58	7.1	4.9	12.1
26	1600	15,700	59	7.1	4.6	12.3
30	1030	11,700	62	7.0	4.9	12.1
Feb.						
2	1600	10,400	60	7.1	4.0	12.6
6	1030	9,400	62	7.1	5.0	12.5
9	1200	7,000	63	7.2	5.8	12.5
14	0800	13,700	60	7.0	5.2	12.6
17	1600	11,700	57	7.2	6.0	12.4
21	1000	11,300	60	7.1	6.3	12.3
23	1700	11,600	58	7.1	5.9	12.4
27	0800	10,900	61	7.2	5.7	12.2
Mar.						
2	1000	11,900	60	7.2	5.2	12.2
6	1100	12,900	62	7.2	5.8	12.5
9	1700	19,200	60	7.4	4.4	12.2
13	0800	16,100	62	7.3	5.0	12.6
16	1300	14,400	62	7.3	5.3	12.5
21	1700	13,100	65	7.3	5.4	12.6
24	1400	14,600	62	7.2	6.4	12.2
28	0900	13,200	63	7.2	5.2	12.4
31	1100	13,600	64	7.3	5.3	12.2
Apr.						
4	0900	10,200	65	7.2	6.8	12.0
7	1000	17,300	57	7.3	7.8	11.7
12	1100	15,000	60	7.2	7.2	12.1
16	0900	14,300	58	7.2	6.9	12.0
20	1700	11,600	56	7.2	7.0	12.0
24	1700	19,200	50	7.3	6.8	11.9
27	0800	21,600	46	7.3	7.0	11.8
May						
2	1100	18,900	48	7.3	9.1	11.8
6	0900	15,000	45	7.2	7.5	11.7
9	1000	15,700	50	7.2	8.5	11.3
13	0800	9,800	50	7.1	9.2	11.0
17	1000	15,000	46	7.1	9.9	11.0
22	1800	12,600	42	7.2	11.6	11.3
25	1700	10,300	50	7.1	10.7	11.1
28	1200	10,800	47	7.2	10.9	11.1
31	1700	9,700	49	7.3	9.3	11.2
June						
4	1700	13,700	50	7.2	10.2	11.0
7	1800	22,100	38	---	11.3	10.9
12	1800	14,200	40	7.4	13.1	10.9
14	1300	14,600	42	7.1	12.7	10.6
18	1500	14,900	46	7.2	14.0	10.4
22	1800	12,000	52	7.3	13.6	10.6
25	1800	13,700	40	7.3	13.2	10.9
29	1500	11,100	44	7.7	14.4	10.5
July						
3	1700	8,770	42	7.4	11.7	10.7
6	1300	6,970	37	7.1	12.7	10.6
10	1600	8,550	48	7.4	13.6	10.7
14	1300	6,880	50	7.4	13.4	10.6
18	0900	11,600	40	7.1	12.1	10.4
21	0800	6,480	37	7.1	13.2	10.1
26	0800	7,050	40	7.1	13.6	10.1
30	0900	9,790	45	7.2	12.8	10.5
Aug.						
3	0900	7,440	45	7.1	15.2	10.0
7	0900	9,730	50	7.2	14.0	10.3
14	0800	9,340	53	7.0	15.1	9.9
18	1200	7,800	50	7.1	15.7	9.7
22	1000	6,110	53	7.1	15.5	10.1
26	1800	10,400	52	7.2	15.2	10.4
29	1700	16,100	58	7.0	12.8	10.6
Sept.						
2	1700	6,610	56	7.1	15.6	10.4
6	1700	9,580	57	7.2	14.2	10.3

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	62	59	60				61	58	59			
2	64	39	61				60	59	60			
3	65	61	63				61	59	60			
4	66	61	66				60	53	56			
5	52	43	47				60	57	58			
6	57	50	54				61	56	58			
7	56	47	50				61	60	61			
8	50	42	45				61	58	60			
9	48	42	45				62	58	61			
10	48	41	44				63	60	62			
11	48	37	41				64	61	63			
12	42	41	41				63	55	57			
13	48	42	45				---	---	---			
14	48	44	46				---	---	---			
15	51	46	48				---	---	---			
16	54	48	52				---	---	---			
17	56	52	54				61	56	58			
18	55	49	53				62	58	60			
19	58	49	53				61	59	60			
20	56	52	53				61	59	60			
21	55	47	51				65	60	61			
22	53	44	47				62	58	60			
23	51	44	47				---	---	---			
24	55	46	51				---	---	---			
25	55	44	51				---	---	---			
26	54	51	52				---	---	---			
27	56	53	55				---	---	---			
28	57	52	56				---	---	---			
29	56	44	51				---	---	---			
30	56	44	51				---	---	---			
31	52	44	50				---	---	---			
MONTH	67	37	48				65	53	60			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	61	58	60	66	65	65			
2	---	---	---	60	58	60	66	65	66			
3	---	---	---	62	58	61	66	65	66			
4	---	---	---	62	61	61	66	63	65			
5	---	---	---	62	61	62	66	58	62			
6	---	---	---	63	62	63	58	52	56			
7	---	---	---	63	59	61	57	53	55			
8	---	---	---	59	57	58	53	48	50			
9	---	---	---	60	58	59	54	50	52			
10	---	---	---	61	59	60	58	54	56			
11	---	---	---	62	61	62	59	57	58			
12	---	---	---	62	62	62	---	---	---			
13	---	---	---	64	62	63	---	---	---			
14	---	---	---	63	62	63	---	---	---			
15	---	---	---	63	60	62	---	---	---			
16	---	---	---	---	---	---	---	---	---			
17	---	---	---	---	---	---	---	---	---			
18	---	---	---	---	---	---	---	---	---			
19	---	---	---	---	---	---	---	---	---			
20	---	---	---	---	---	---	---	---	---			
21	---	---	---	---	---	---	---	---	---			
22	60	58	59	67	64	65	---	---	---			
23	60	57	58	64	62	63	---	---	---			
24	61	58	60	63	61	62	---	---	---			
25	62	60	61	64	63	64	---	---	---			
26	61	61	61	65	62	64	---	---	---			
27	62	60	61	63	60	62	---	---	---			
28	60	57	59	63	61	62	---	---	---			
29	---	---	---	65	63	64	---	---	---			
30	---	---	---	66	64	65	---	---	---			
31	---	---	---	66	64	65	---	---	---			
MONTH	62	57	60	67	57	62	66	48	58			

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	46	42	44				---	---	---
2	---	---	---	45	42	44				---	---	---
3	---	---	---	47	41	45				---	---	---
4	---	---	---	49	45	47				---	---	---
5	---	---	---	50	47	48				39	35	37
6	---	---	---	50	46	49				41	37	39
7	---	---	---	50	47	49				43	40	41
8	---	---	---	51	48	49				44	41	43
9	---	---	---	51	46	49				47	42	45
10	---	---	---	49	47	48				49	44	46
11	---	---	---	53	48	50				50	44	47
12	---	---	---	54	49	51				51	44	47
13	---	---	---	51	48	50				50	44	48
14	---	---	---	53	47	49				49	45	47
15	---	---	---	50	47	49				49	43	46
16	---	---	---	50	46	48				48	45	47
17	---	---	---	48	39	44				48	45	46
18	---	---	---	47	40	43				50	45	47
19	---	---	---	45	39	42				50	46	48
20	---	---	---	43	37	40				49	44	47
21	---	---	---	45	37	40				44	41	42
22	---	---	---	---	---	---				45	40	43
23	41	39	40	---	---	---				46	43	45
24	42	40	42	---	---	---				45	42	43
25	45	38	40	---	---	---				44	41	43
26	45	41	43	---	---	---				47	43	45
27	46	42	44	---	---	---				50	46	48
28	50	45	48	---	---	---				50	48	49
29	48	44	47	---	---	---				51	49	50
30	49	47	48	---	---	---				51	48	50
31	---	---	---	---	---	---				---	---	---
MONTH	50	38	44	54	37	47				51	35	45
YEAR	67	35	52									

PH (UNITS), WATER YEAR JUNE 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	7.4	7.1	7.2				---	---	---
2	---	---	---	7.5	7.1	7.3				---	---	---
3	---	---	---	7.4	7.1	7.2				---	---	---
4	---	---	---	7.6	7.1	7.3				---	---	---
5	---	---	---	7.6	7.1	7.4				7.2	7.1	7.1
6	---	---	---	7.6	7.2	7.3				7.3	7.1	7.2
7	---	---	---	7.6	7.1	7.3				7.3	7.1	7.2
8	---	---	---	7.7	7.1	7.3				7.3	7.1	7.2
9	---	---	---	7.6	7.1	7.3				7.4	7.1	7.2
10	---	---	---	7.6	7.1	7.3				7.4	7.2	7.3
11	---	---	---	7.5	7.2	7.3				7.3	7.2	7.3
12	---	---	---	7.6	7.2	7.4				7.4	7.2	7.3
13	---	---	---	7.6	7.2	7.3				7.4	7.2	7.3
14	---	---	---	7.7	7.2	7.4				7.4	7.2	7.3
15	---	---	---	7.8	7.2	7.4				7.3	7.2	7.3
16	---	---	---	7.5	7.2	7.3				7.4	7.2	7.3
17	---	---	---	7.5	7.2	7.3				7.5	7.2	7.3
18	---	---	---	7.5	7.1	7.3				7.5	7.2	7.3
19	---	---	---	7.6	7.0	7.3				7.4	7.2	7.3
20	---	---	---	7.6	7.1	7.3				7.4	7.2	7.3
21	---	---	---	7.8	7.1	7.4				7.3	7.2	7.2
22	---	---	---	7.8	7.1	7.4				7.4	7.1	7.2
23	7.6	7.2	7.4	7.7	7.1	7.3				7.4	7.2	7.3
24	7.4	7.2	7.3	7.7	7.1	7.3				7.4	7.2	7.3
25	7.6	7.2	7.4	7.6	7.1	7.3				7.4	7.2	7.3
26	7.5	7.2	7.4	---	---	---				7.4	7.2	7.3
27	7.7	7.2	7.4	---	---	---				7.5	7.2	7.3
28	7.6	7.2	7.3	---	---	---				7.4	7.3	7.3
29	7.6	7.2	7.4	---	---	---				7.5	7.2	7.3
30	7.6	7.1	7.3	---	---	---				7.4	7.2	7.3
31	---	---	---	---	---	---				---	---	---
MONTH	7.7	7.1	7.4	7.8	7.0	7.3				7.5	7.1	7.3
YEAR	7.8	7.0	7.3									

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	12.0	12.0				8.0	7.0	7.5			
2	12.0	11.5	12.0				7.5	7.0	7.5			
3	11.0	11.0	11.0				7.5	7.0	7.0			
4	11.0	10.0	11.0				7.5	7.0	7.0			
5	11.0	10.5	11.0				7.0	6.5	6.5			
6	11.5	10.0	10.5				6.5	6.5	6.5			
7	12.0	11.0	11.5				7.0	6.5	7.0			
8	12.0	11.0	11.5				7.0	6.5	6.5			
9	12.0	11.5	12.0				7.0	6.5	7.0			
10	12.0	11.5	11.5				7.0	6.5	7.0			
11	12.5	11.0	11.5				7.5	7.0	7.5			
12	12.0	11.0	11.5				7.5	7.0	7.0			
13	11.5	10.5	11.0				---	---	---			
14	11.0	10.5	10.5				---	---	---			
15	10.5	9.5	10.0				---	---	---			
16	10.0	9.0	9.5				---	---	---			
17	9.5	8.5	9.0				6.0	6.0	6.0			
18	9.5	8.0	9.0				6.5	6.0	6.5			
19	9.5	8.5	9.0				7.0	6.5	6.5			
20	9.5	7.5	8.5				6.5	5.5	6.0			
21	9.5	8.0	8.5				6.0	5.5	6.0			
22	9.5	7.5	9.0				6.5	6.0	6.5			
23	9.5	8.5	9.0				6.5	4.5	5.5			
24	9.5	8.5	9.0				---	---	---			
25	9.5	8.5	9.0				---	---	---			
26	10.0	9.0	9.5				---	---	---			
27	9.5	8.5	9.0				---	---	---			
28	10.0	9.5	9.5				---	---	---			
29	10.0	9.0	9.5				---	---	---			
30	9.5	8.5	9.0				---	---	---			
31	9.5	9.0	9.0				---	---	---			
MONTH	12.5	7.5	10.0				8.0	4.5	6.5			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	5.5	5.0	5.5	7.0	5.0	6.0			
2	---	---	---	5.5	5.0	5.0	7.0	6.0	6.5			
3	---	---	---	5.5	5.0	5.5	7.0	6.0	6.5			
4	---	---	---	5.5	5.0	5.5	8.5	6.5	7.5			
5	---	---	---	6.0	5.0	5.5	9.0	7.0	8.0			
6	---	---	---	6.0	5.5	5.5	9.0	7.5	8.0			
7	---	---	---	6.0	5.5	5.5	8.5	7.5	8.0			
8	---	---	---	5.0	5.0	5.0	7.5	5.5	7.0			
9	---	---	---	5.0	4.5	4.5	6.5	5.5	6.0			
10	---	---	---	5.5	4.5	5.0	6.5	6.0	6.0			
11	---	---	---	5.0	5.0	5.0	8.0	6.0	7.0			
12	---	---	---	6.0	5.0	5.5	---	---	---			
13	---	---	---	5.5	5.0	5.0	---	---	---			
14	---	---	---	5.0	4.5	5.0	---	---	---			
15	---	---	---	5.5	5.0	5.0	---	---	---			
16	---	---	---	---	---	---	---	---	---			
17	---	---	---	---	---	---	---	---	---			
18	---	---	---	---	---	---	---	---	---			
19	---	---	---	---	---	---	---	---	---			
20	---	---	---	---	---	---	---	---	---			
21	---	---	---	---	---	---	---	---	---			
22	6.0	5.5	5.5	6.0	5.0	6.0	---	---	---			
23	6.0	5.0	5.5	6.5	6.0	6.5	---	---	---			
24	5.5	5.0	5.0	6.5	6.0	6.0	---	---	---			
25	5.0	4.5	5.0	6.0	5.5	6.0	---	---	---			
26	5.5	4.5	5.0	5.5	5.5	5.5	---	---	---			
27	6.0	5.0	5.5	5.5	5.0	5.5	---	---	---			
28	6.0	5.0	5.5	6.5	5.0	5.5	---	---	---			
29	---	---	---	7.0	5.5	6.5	---	---	---			
30	---	---	---	7.0	6.0	6.5	---	---	---			
31	---	---	---	6.5	5.5	6.0	---	---	---			
MONTH	6.0	4.5	5.5	7.0	4.5	5.5	9.0	5.0	7.0			

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	14.0	12.0	13.0				---	---	---
2	---	---	---	12.5	11.5	12.0				---	---	---
3	---	---	---	12.0	10.5	11.5				---	---	---
4	---	---	---	13.0	10.5	12.0				---	---	---
5	---	---	---	13.5	11.5	12.5				14.5	13.0	13.5
6	---	---	---	14.0	11.5	12.5				14.5	13.0	13.5
7	---	---	---	14.5	11.5	13.0				14.0	12.5	13.5
8	---	---	---	15.5	12.5	14.0				14.0	12.5	13.0
9	---	---	---	14.5	12.5	13.5				14.5	12.5	13.5
10	---	---	---	14.0	12.0	13.0				14.5	12.0	13.5
11	---	---	---	13.5	12.5	13.0				15.0	12.5	14.0
12	---	---	---	13.0	11.5	12.0				15.5	13.0	14.0
13	---	---	---	13.0	12.0	12.0				15.5	13.0	14.5
14	---	---	---	15.0	12.0	13.0				14.5	13.5	14.0
15	---	---	---	15.5	13.0	14.0				13.5	13.0	13.5
16	---	---	---	14.5	13.0	14.0				13.0	11.5	12.5
17	---	---	---	13.0	12.5	12.5				12.0	11.0	11.5
18	---	---	---	---	---	---				12.0	11.5	12.0
19	---	---	---	---	---	---				12.5	11.5	12.0
20	---	---	---	---	---	---				12.0	11.5	12.0
21	---	---	---	---	---	---				12.0	11.0	11.5
22	---	---	---	---	---	---				12.0	11.0	11.5
23	14.0	12.5	13.0	---	---	---				12.0	10.5	11.5
24	13.5	12.5	13.0	---	---	---				11.0	10.0	10.5
25	13.0	12.0	12.5	---	---	---				11.0	10.0	10.5
26	13.0	12.5	13.0	---	---	---				11.5	11.0	11.0
27	14.0	12.0	13.0	---	---	---				12.0	10.0	11.0
28	13.5	12.5	13.0	---	---	---				11.5	10.5	11.0
29	14.5	12.0	13.0	---	---	---				12.0	10.5	11.0
30	15.0	12.5	13.5	---	---	---				11.5	10.5	11.0
31	---	---	---	---	---	---				---	---	---
MONTH	15.0	12.0	13.0	15.5	10.5	13.0				15.5	10.0	12.5
YEAR	15.5	4.5	9.5									

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.1	10.5	10.8				12.4	12.0	12.2			
2	11.2	10.6	10.9				12.4	12.1	12.3			
3	11.5	10.8	11.2				12.1	11.8	11.9			
4	11.4	10.8	11.1				11.9	11.6	11.8			
5	11.4	10.9	11.1				12.2	11.9	12.1			
6	11.5	10.8	11.0				12.2	11.6	11.9			
7	11.4	10.8	11.1				12.2	12.0	12.1			
8	11.3	10.7	11.0				12.2	11.9	12.1			
9	11.1	10.8	10.9				12.1	11.6	11.9			
10	11.0	10.5	10.6				11.9	11.6	11.8			
11	11.0	10.5	10.7				12.2	11.5	11.9			
12	11.1	10.6	10.9				12.1	11.7	11.9			
13	11.5	10.5	11.2				---	---	---			
14	11.5	10.4	10.9				---	---	---			
15	11.4	10.5	11.0				---	---	---			
16	11.8	11.0	11.4				---	---	---			
17	12.2	11.2	11.7				---	---	---			
18	12.1	11.2	11.6				---	---	---			
19	11.9	11.1	11.5				---	---	---			
20	12.0	11.2	11.6				---	---	---			
21	12.2	11.2	11.6				---	---	---			
22	12.0	11.2	11.7				---	---	---			
23	12.0	11.1	11.5				---	---	---			
24	11.8	11.2	11.4				12.9	11.4	11.4			
25	11.6	11.0	11.3				12.7	11.3	12.0			
26	11.6	10.8	11.2				12.7	11.5	12.2			
27	11.2	11.0	11.1				12.7	11.7	12.4			
28	---	---	---				---	---	---			
29	---	---	---				---	---	---			
30	---	---	---				---	---	---			
31	---	---	---				---	---	---			
MONTH	12.2	10.4	11.2				12.9	11.3	12.0			

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1				12.5	12.0	12.2	12.6	11.7	12.3			
2				12.4	12.2	12.3	12.3	11.6	11.9			
3				12.5	11.6	12.2	12.1	11.4	11.7			
4				12.2	11.8	12.0	12.5	11.0	12.0			
5				12.2	11.8	11.9	12.3	11.1	11.8			
6				12.3	11.6	12.0	12.8	11.6	12.3			
7				12.4	11.8	12.2	12.6	11.6	12.1			
8				12.4	11.7	11.9	11.6	11.3	11.4			
9				12.2	11.6	11.8	11.4	11.1	11.2			
10				12.2	11.4	11.6	11.4	11.0	11.2			
11				12.4	11.2	11.9	12.0	11.1	11.6			
12				12.3	11.0	11.6	---	---	---			
13				---	---	---	---	---	---			
14				---	---	---	---	---	---			
15				---	---	---	---	---	---			
16				---	---	---	---	---	---			
17				---	---	---	---	---	---			
18				---	---	---	---	---	---			
19				---	---	---	---	---	---			
20				---	---	---	---	---	---			
21				---	---	---	---	---	---			
22				13.3	12.7	13.0	---	---	---			
23				13.1	12.6	12.8	---	---	---			
24				12.9	12.2	12.6	---	---	---			
25				13.0	11.7	12.1	---	---	---			
26				12.8	11.6	12.0	---	---	---			
27				13.0	12.0	12.3	---	---	---			
28				12.9	12.1	12.2	---	---	---			
29				12.9	12.4	12.6	---	---	---			
30				12.9	12.2	12.5	---	---	---			
31				12.4	12.2	12.3	---	---	---			
MONTH				13.3	11.0	12.2	12.8	11.0	11.8			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	10.4	10.1	10.2				---	---	---
2	---	---	---	10.7	10.3	10.5				---	---	---
3	---	---	---	10.9	10.4	10.6				---	---	---
4	---	---	---	10.9	10.6	10.7				---	---	---
5	---	---	---	10.7	10.4	10.6				10.3	10.2	10.3
6	---	---	---	10.8	10.5	10.6				10.3	10.2	10.3
7	---	---	---	10.6	10.4	10.5				10.5	10.3	10.3
8	---	---	---	10.4	10.2	10.3				10.5	10.3	10.4
9	---	---	---	10.5	10.1	10.3				10.4	10.3	10.3
10	---	---	---	10.7	10.3	10.5				10.4	10.2	10.3
11	---	---	---	10.5	10.3	10.4				10.3	10.1	10.2
12	---	---	---	10.7	10.3	10.5				10.2	10.1	10.1
13	---	---	---	10.8	10.4	10.6				10.2	10.0	10.1
14	---	---	---	10.6	10.4	10.5				10.2	10.1	10.1
15	---	---	---	10.5	10.2	10.3				10.3	10.2	10.2
16	---	---	---	10.4	10.1	10.2				10.4	10.2	10.3
17	---	---	---	10.7	10.3	10.5				10.6	10.4	10.5
18	---	---	---	10.8	10.2	10.4				10.6	10.3	10.4
19	---	---	---	10.7	10.0	10.3				10.7	10.2	10.4
20	---	---	---	10.4	10.0	10.2				10.7	10.3	10.5
21	---	---	---	10.6	10.0	10.2				10.7	10.5	10.6
22	---	---	---	---	---	---				10.9	10.6	10.7
23	10.6	10.3	10.5	---	---	---				10.8	10.6	10.7
24	10.4	10.3	10.4	---	---	---				11.1	10.7	10.9
25	10.8	10.4	10.5	---	---	---				11.2	10.9	11.0
26	10.7	10.2	10.5	---	---	---				11.0	10.7	10.9
27	10.7	10.3	10.5	---	---	---				10.8	10.7	10.8
28	10.6	10.2	10.4	---	---	---				10.9	10.6	10.8
29	10.6	10.3	10.4	---	---	---				11.0	10.7	10.8
30	10.5	10.2	10.4	---	---	---				11.0	10.7	10.8
31	---	---	---	---	---	---				---	---	---
MONTH	10.8	10.2	10.5	10.9	10.0	10.4				11.2	10.0	10.5
YEAR	13.3	10.0	11.2									

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°26'42", long 122°20'03", in SE¼SE¼ sec.7, T.34 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on draw rest of and 150 ft (46 m) downstream from bridge on former U.S. Highway 99, 1.5 mi (2.4 km) north of Skagit Valley Junior College in Mount Vernon, and at mile 15.7 (25.3 km).

DRAINAGE AREA.--3,093 mi² (8,011 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only October 1940, published in WSP 1316.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is at mean sea level. Supplementary water-stage recorder in bridge pier 0.2 mi (0.3 km) downstream from base gage Dec. 5, 1957, to Oct. 15, 1964.

REMARKS.--Water discharge records good. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs, Baker Lake and Lake Shannon (see stations 12176500, 12177700, 12191600, 12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--37 years, 16,840 ft³/s (476.9 m³/s) 12,200,000 acre-ft (15,000 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 144,000 ft³/s (4,080 m³/s) Feb. 11, 1951, elevation, 36.85 ft (11.232 m); minimum, 2,740 ft³/s (77.6 m³/s) Oct. 26, 1942, elevation, 7.37 ft (2.246 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1906 reached a stage of 37 ft (11.3 m), from Great Northern Railway high-water profile, discharge 180,000 ft³/s (5,100 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft³/s (1,420 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 19	0130	*52,800	(1,495)	*24.95	(7.605)

Minimum discharge, 3,680 ft³/s (104 m³/s) Oct. 25, gage height, 8.48 ft (2.585 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9350	11400	13100	12700	11800	12700	13100	18500	16300	10600	9840	7330
2	9630	10600	12900	11600	10900	12600	11400	19700	17600	11000	8200	7560
3	9880	8940	12600	14100	11300	13000	10800	21800	14400	10700	9420	10800
4	9440	8800	11200	13100	11100	11700	10700	19800	13800	10000	9520	10600
5	7970	7260	12400	15400	9470	11600	11500	17600	16200	9290	9630	11200
6	5720	7400	12100	14700	9030	12700	13500	15900	17500	8870	9910	9470
7	5550	6820	12200	12600	9240	15100	16700	15000	21600	7950	10300	8300
8	6960	6270	14600	12900	9790	19100	19300	14900	23400	7810	9100	7280
9	7670	7380	16800	12100	9030	19800	18400	14100	18000	7930	8890	6640
10	6670	6890	13100	12500	9650	19000	16100	12000	14900	7880	8940	5630
11	9120	7930	12500	12100	14100	15600	14500	12800	15000	8390	9680	6050
12	9240	9050	13600	13400	13800	14800	14500	11500	14500	9290	9010	6230
13	7700	7880	12300	12800	19300	16900	14800	10500	14800	9980	9190	5940
14	7970	7510	11500	11700	15000	16900	15300	10300	14600	8830	9770	6850
15	7670	7470	10200	11300	14000	16600	15200	10500	14100	8040	9930	7400
16	5940	9680	12300	11000	13200	15600	14500	10400	13500	8500	10200	5000
17	5410	14700	12900	14600	12700	12700	13000	12600	13700	11800	9310	5200
18	5790	18700	15200	35200	14400	12300	12600	9770	14600	12400	9260	5000
19	5410	13700	11600	42200	11600	11600	13200	9540	15100	9750	8780	5200
20	5660	12400	11700	25900	10800	12800	13200	9700	14400	8340	8680	6690
21	4750	10600	11200	20500	11100	13300	12500	10500	12400	8020	8160	11600
22	6490	9560	10100	18900	12400	14800	11900	12700	11900	8800	7540	8780
23	6580	9720	10000	17300	13000	14300	13800	12900	12200	8830	7630	6940
24	5110	10100	9170	16400	12400	15200	17800	13900	11200	8480	9810	8710
25	5680	14100	8000	15600	11300	14000	23600	11400	12400	8890	12000	8430
26	7670	12600	19500	14600	11300	12700	26300	11500	13200	8990	12500	7190
27	5390	11200	27400	14400	11500	14400	22300	11800	11600	9930	9840	5570
28	5020	11600	18500	13700	12600	13600	19100	12600	11300	9260	8800	5350
29	6910	11800	16200	13000	---	14300	18500	10700	11400	11000	13500	6320
30	6730	12500	13400	13000	---	14300	18200	8890	11000	9650	12800	6760
31	8060	---	11900	12700	---	13400	---	9580	---	9620	9700	---
TOTAL	217140	304560	410170	498000	335810	447400	466300	403380	436600	288620	299640	220020
MEAN	7005	10150	13230	16060	11990	14430	15540	13010	14550	9310	9666	7334
MAX	9880	18700	27400	42200	19300	19800	26300	21800	23400	12400	13500	11600
MIN	4750	6270	8000	11000	9030	11600	10700	8890	11000	7810	7540	5000
AC-FT	430700	604100	813600	987800	666100	887400	924900	800100	866000	572500	594300	436400

CAL YR 1976 TOTAL 6432320 MEAN 17570 MAX 39000 MIN 4750 AC-FT 12760000
WTR YR 1977 TOTAL 4327640 MEAN 11860 MAX 42200 MIN 4750 AC-FT 8584000

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at the U.S. Interstate 5 bridge 1,200 ft (370 m) downstream from gage.

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1974 to current year.
WATER TEMPERATURE: July 1962 to Aug. 1970, February 1974 to current year.

INSTRUMENTATION.--Water-quality monitor since February 1974.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. In addition to the water-quality monitor record, samples were collected approximately three times a month.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, and specific conductance for half of the water-quality samples listed below furnished by Washington State Department of Ecology. For the diel study, the coliform analyses were performed by Washington State Department of Ecology.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 75 micromhos Feb. 9, 1977; minimum, 25 micromhos July 7, 1975.
WATER TEMPERATURES: Maximum, 19.0°C Aug. 12, 1977; minimum, 1.0°C Jan. 28 to Feb. 1, 1969.

EXTREMES OUTSIDE PERIOD OF DAILY RECORD.--A water temperature of 17.8°C was observed on Aug. 3, 1961.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 75 micromhos Feb. 9; minimum, 32 micromhos Aug. 17.
WATER TEMPERATURES: Maximum, 19.0°C Aug. 12; minimum recorded, 3.0°C Jan. 24-27, 29, 30.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	FECAL COLIFORM, .7UM-MF (COL./100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)
OCT										
12...	1420	7240	45	7.3	12.6	5	--	--	--	--
13...	0920	6670	44	7.7	11.0	3	2000	B190	--	300
26...	1455	6620	58	7.4	10.2	5	--	--	--	--
NOV										
09...	1630	6160	68	7.2	10.1	2	--	--	--	--
16...	0930	9300	53	6.3	9.1	2	B190	--	98	--
17...	1405	14500	59	7.3	9.5	7	--	--	--	--
DEC										
07...	1405	12800	65	7.4	7.5	5	--	--	--	--
15...	1120	9540	68	6.4	7.6	2	B80	--	88	--
21...	1250	10700	65	7.4	6.5	2	--	--	--	--
JAN										
12...	1710	13700	65	7.1	4.6	8	--	--	--	--
18...	1040	34000	48	7.4	5.0	65	B700	--	B170	--
25...	1320	14000	71	7.1	--	6	--	--	--	--
FEB										
02...	1315	9610	--	7.5	5.7	3	--	--	--	--
16...	1220	11800	54	7.6	5.8	3	B30	--	82	--
22...	1415	11100	66	7.1	6.1	4	--	--	--	--
MAR										
15...	1015	16300	60	7.6	5.2	2	70	--	B26	--
15...	1340	16300	70	7.5	5.8	2	--	--	--	--
30...	1500	14100	72	7.5	7.5	3	--	--	--	--
APR										
12...	1325	14200	66	7.1	8.5	4	--	--	--	--
19...	0955	13000	60	7.4	7.2	2	B140	--	6	--
26...	1650	27100	44	7.2	8.1	16	--	--	--	--
MAY										
10...	1435	11900	62	7.2	10.8	3	--	--	--	--
18...	1000	9300	57	7.5	9.4	2	B700	--	140	--
24...	1255	12800	53	7.4	9.3	3	--	--	--	--
JUN										
14...	1445	14900	43	7.5	13.9	7	--	--	--	--
21...	1015	11900	44	7.2	12.2	8	B400	--	B15	--
28...	1345	9560	47	7.8	14.1	5	--	--	--	--
JUL										
06...	1450	7010	57	6.9	13.6	2	--	--	--	--
19...	1705	7930	--	7.2	15.5	5	--	--	--	--
28...	1145	6730	46	7.2	13.9	4	200	--	58	--
AUG										
01...	0815	9260	39	7.3	15.0	40	>30	--	B20	--
01...	1415	9490	50	7.4	16.8	25	B120	--	B45	--
02...	1510	7120	50	7.4	19.1	40	--	--	--	--
16...	1520	8390	--	7.1	--	55	--	--	--	--
17...	1010	9150	38	7.8	16.0	50	5600	--	B94	--
SEP										
07...	1530	7300	--	--	14.6	8	--	--	--	--
20...	1545	8370	56	7.3	12.2	3	--	--	--	--
21...	1220	12900	39	6.9	11.8	15	B1700	--	330	--

B Results based upon colony counts outside the ideal range.

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
OCT									
12...	--	--	--	--	--	--	--	--	--
13...	--	19	0	5.7	1.2	1.3	.6	24	20
26...	--	--	--	--	--	--	--	--	--
NOV									
09...	--	--	--	--	--	--	--	--	--
16...	250	23	1	7.4	1.1	1.1	.5	27	22
17...	--	--	--	--	--	--	--	--	--
DEC									
07...	--	--	--	--	--	--	--	--	--
15...	B160	27	0	8.5	1.5	1.3	.5	33	27
21...	--	--	--	--	--	--	--	--	--
JAN									
12...	--	--	--	--	--	--	--	--	--
18...	620	20	11	6.0	1.3	.9	.4	12	10
25...	--	--	--	--	--	--	--	--	--
FEB									
02...	--	--	--	--	--	--	--	--	--
16...	210	25	3	7.6	1.4	1.3	.5	27	22
22...	--	--	--	--	--	--	--	--	--
MAR									
15...	260	30	3	9.2	1.6	1.4	.5	33	27
15...	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--
APR									
12...	--	--	--	--	--	--	--	--	--
19...	170	26	4	8.2	1.4	1.3	.6	27	22
26...	--	--	--	--	--	--	--	--	--
MAY									
10...	--	--	--	--	--	--	--	--	--
18...	680	26	3	7.8	1.7	1.7	.6	29	24
24...	--	--	--	--	--	--	--	--	--
JUN									
14...	--	--	--	--	--	--	--	--	--
21...	50	15	1	4.4	.9	1.2	.5	17	14
28...	--	--	--	--	--	--	--	--	--
JUL									
06...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
20...	280	22	5	6.9	1.2	1.5	.6	21	17
AUG									
01...	--	26	7	7.6	1.6	2.2	.9	23	19

DATE	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
AUG									
01...	--	--	--	--	--	--	--	22	18
02...	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--
17...	5600	17	3	4.9	1.1	1.3	.5	17	14
SEP									
07...	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	-	--
21...	370	21	6	6.5	1.2	1.3	.6	18	15

B Results based upon colony counts outside the ideal range.

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT									
12...	--	--	--	--	--	--	--	--	.01
13...	.9	4.5	.8	.1	5.0	37	32	0	.02
26...	--	--	--	--	--	--	--	--	.07
NOV									
09...	--	--	--	--	--	--	--	--	.02
16...	22	4.9	.6	.1	5.2	33	34	0	.03
17...	--	--	--	--	--	--	--	--	.08
DEC									
07...	--	--	--	--	--	--	--	--	.11
15...	21	3.9	.9	.0	6.5	46	39	10	.14
21...	--	--	--	--	--	--	--	--	.16
JAN									
12...	--	--	--	--	--	--	--	--	.14
18...	.8	9.1	.8	.0	4.6	34	29	205	.14
25...	--	--	--	--	--	--	--	--	.16
FEB									
02...	--	--	--	--	--	--	--	--	.16
16...	1.1	5.3	.3	.1	6.4	38	36	5	.13
22...	--	--	--	--	--	--	--	--	.15
MAR									
15...	1.3	5.8	.9	.0	7.2	45	43	0	.36
15...	--	--	--	--	--	--	--	--	.17
30...	--	--	--	--	--	--	--	--	.14
APR									
12...	--	--	--	--	--	--	--	--	.13
19...	1.7	3.9	1.0	.0	7.7	36	38	7	.12
26...	--	--	--	--	--	--	--	--	.12
MAY									
10...	--	--	--	--	--	--	--	--	.12
19...	1.5	3.9	1.0	.0	6.7	38	38	0	.13
26...	--	--	--	--	--	--	--	--	.11
JUN									
14...	--	--	--	--	--	--	--	--	.05
21...	1.7	2.8	.7	.0	4.8	25	24	17	.03
28...	--	--	--	--	--	--	--	--	.08
JUL									
06...	--	--	--	--	--	--	--	--	.05
19...	--	--	--	--	--	--	--	--	.05
20...	2.1	4.1	1.2	.1	5.7	30	32	14	.04
AUG									
01...	1.8	8.2	1.8	.1	6.3	--	60	--	--
01...	1.6	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	.07
16...	--	--	--	--	--	--	--	--	.04
17...	.4	3.9	.8	.1	5.7	26	27	154	.05
SEP									
07...	--	--	--	--	--	--	--	--	.06
20...	--	--	--	--	--	--	--	--	.08
21...	3.6	7.1	.9	.0	5.8	33	32	46	.06

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOSPHORUS (P) (MG/L)	SUS-PENDED SEDIMENT (MG/L)	SUS-PENDED SEDIMENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT									
12...	.00	--	.06	.08	.02	.00	--	--	--
13...	.00	.02	.05	.08	.01	.00	13	736	20
26...	.01	--	.07	.20	.03	.00	--	--	--
NOV									
09...	.00	--	.02	.11	.01	.01	--	--	--
16...	.00	.03	.02	.11	.02	.00	10	456	10
17...	.01	--	.08	.40	.04	.00	--	--	--
DEC									
07...	.01	--	.06	.19	.02	.00	--	--	--
15...	.00	.14	.02	.11	.01	.00	17	438	13
21...	.00	--	.04	.10	.01	.00	--	--	--
JAN									
12...	.00	--	.09	.12	.03	.00	--	--	--
18...	.02	.16	.23	.50	.08	.00	465	42700	60
25...	.01	--	.08	.21	.02	.00	--	--	--
FEB									
02...	.01	--	.05	.22	.04	.00	--	--	--
16...	.00	.13	.03	.08	.02	.01	32	1020	13
22...	.00	--	.04	.07	.02	.00	--	--	--
MAR									
15...	.00	.36	.02	.08	.01	.00	37	1630	16
15...	.00	--	.03	.09	.01	.00	--	--	--
30...	.00	--	.02	.08	.01	.00	--	--	--
APR									
12...	.00	--	.04	.08	.01	.00	--	--	--
19...	.01	.13	.02	.07	.01	.00	12	621	16
26...	.00	--	.04	.12	.08	.00	--	--	--
MAY									
10...	.01	--	.02	.09	.01	.00	--	--	--
18...	.01	.14	.05	.12	.01	.00	22	557	13
24...	.00	--	.04	.10	.02	.00	--	--	--
JUN									
14...	.00	--	.04	.09	.01	.00	--	--	--
21...	.01	.04	.07	.10	.03	.00	24	771	46
28...	.00	--	.07	.19	.01	.00	--	--	--
JUL									
06...	.01	--	.04	.08	.01	.00	--	--	--
19...	.00	--	.04	.14	.02	.00	--	--	--
20...	.00	.04	.08	.14	.02	.00	19	365	24
AUG									
01...	--	.05	.14	.16	.11	.02	--	--	--
01...	--	.06	.17	.47	.10	.00	--	--	--
02...	.01	--	.16	.31	.08	.00	--	--	--
16...	.01	--	.12	.18	.16	.00	--	--	--
17...	.00	.05	.08	.13	.15	.00	175	4320	93
SEP									
07...	.01	--	.06	.10	.03	.00	--	--	--
20...	.00	--	.03	.09	.03	.00	--	--	--
21...	.01	.07	.05	.11	.05	.00	129	4490	58

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT												
13...	0920	1	1	<10	0	0	0	<50	0	<10	3	200
JAN												
18...	1040	7	1	<10	0	30	0	<50	0	20	1	8300
APR												
19...	0955	0	0	<10	0	10	10	<50	0	<10	2	330
JUL												
20...	1145	1	1	<10	0	0	0	<50	0	10	2	350

DATE	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)
OCT												
13...	100	<100	0	10	10	.0	.0	0	0	0	0	.7
JAN												
18...	70	<100	3	190	10	.3	.0	0	0	40	10	7.0
APR												
19...	60	<100	0	10	10	.0	.0	1	0	10	0	.9
JUL												
20...	60	<100	2	8	0	.0	.0	5	0	20	0	2.0

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
01...	0815	9260	39	7.3	15.0	40	9.9	97	>30	K20	26
01...	1210	9440	45	7.6	15.8	--	10.1	101	--	--	--
01...	1350	9490	46	7.5	16.2	--	10.0	101	--	--	--
01...	1415	9490	50	7.4	16.0	25	10.6	106	K120	K45	--
01...	1655	9650	52	7.3	16.0	--	10.9	102	--	--	--
01...	1920	9650	51	7.5	17.5	10	10.1	105	K40	K4	--
01...	2130	9810	49	7.5	17.2	--	10.0	103	--	--	--
01...	2315	9560	44	7.6	16.8	--	9.8	100	--	--	--
02...	0115	8520	43	7.4	16.5	15	9.9	101	K50	K32	--
02...	0315	7560	43	7.5	16.2	--	10.0	101	--	--	--
02...	0545	6890	43	7.4	15.6	--	9.7	96	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
01...	7	7.6	1.6	2.2	.9	23	0	19	1.8	8.2
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	22	0	18	1.4	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
01...	1.0	.1	6.3	40	199	.05	.14	.16	.11	.02
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	106	.06	.17	.47	.10	.00
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE	OCT 13,76		NOV 16,76		DEC 15,76		JAN 18,77		FEB 16,77	
TIME	0920		0930		1120		1040		1220	
TOTAL CELLS/ML	82		280		29		500		120	
DIVERSITY: DIVISION	0.8		0.7		0.5		0.9		0.2	
.CLASS	0.8		0.7		0.5		0.9		0.2	
..ORDER	0.8		0.8		1.2		1.0		0.5	
...FAMILY	2.1		2.4		1.7		1.7		2.6	
....GENUS	2.3		2.6		1.9		1.7		3.1	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	4	3
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	18#	22	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	3	11	7	1	--	-
....MELOSIRA	--	-	--	-	3	11	--	-	7	6
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	5	6	32	11	*	0	--	-	28#	24
....COCCONEIS	--	-	--	-	--	-	7	1	4	3
....RHOICOSPHENIA	--	-	*	0	--	-	14	3	--	-
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	23#	28	22	8	*	0	--	-	--	-
....EPITHEMIA	--	-	*	0	--	-	21	4	--	-
...DIATOMACEAE										
....DIATOMA	--	-	*	0	--	-	7	1	--	-
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	8	3	--	-	--	-	7	6
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....HANNAEA	5	6	2	1	--	-	--	-	4	3
....SYNEDRA	23#	28	150#	51	16#	56	48	10	14	12
...GOMPHONEMATACEAE										
....GOMPHONEMA	*	0	6	2	*	0	--	-	14	12
...NAVICULACEAE										
....DIPLONEIS	--	-	--	-	--	-	--	-	--	-
....FRUSTULIA	--	-	*	0	*	0	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	6	2	--	-	41	8	11	9
....PINNULARIA	--	-	--	-	--	-	--	-	4	3
...NITZSCHIACEAE										
....HANTZSCHIA	--	-	--	-	--	-	14	3	--	-
....NITZSCHIA	9	11	6	2	3	11	--	-	25#	21
...SURIRELLACEAE										
....SURIRELLA	--	-	2	1	--	-	--	-	--	-
...TABELLARIACEAE										
....TABELLARIA	--	-	14	5	*	0	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
SAMPLING METHOD: EDI

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 13,76 0920		NOV 16,76 0930		DEC 15,76 1120		JAN 18,77 1040		FEB 16,77 1220	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	10	3	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	3	11	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	6	3	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	20	7	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	3600#	60	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	6	1	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM, EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
 SAMPLING METHOD: IDI

DATE TIME		MAY 16,77 1000	JUN 21,77 1015	JUL 20,77 1145	AUG 17,77 1010	SEP 21,77 1220
TOTAL CELLS/ML		610	460	390	33	1000
DIVERSITY:	DIVISION	1.0	1.1	0.3	0.0	1.4
	.CLASS	1.0	1.1	0.9	0.5	1.4
	..ORDER	1.0	1.2	1.1	0.5	2.0
	...FAMILY	2.3	2.0	2.4	1.4	2.8
	....GENUS	2.5	3.0	2.9	1.4	2.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	64	6
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	--	-	51	5
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	39	4
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	20	4	--	-	--	-	26	2
....SCENEDESMUS	--	-	--	-	--	-	--	-	100	10
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	11	3	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	6	1
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	*	0	--	-	16	4	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	5	1	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	80	13	50	11	140#	36	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	13	1
....RHOICOSPHENIA	6	1	--	-	5	1	--	-	--	-
...CYMBELLACEAE										
....AMPHORA	--	-	--	-	5	1	--	-	26	2
....CYMBELLA	18	3	50	11	11	3	--	-	--	-
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
....DIATOMA	6	1	35	8	--	-	--	-	--	-
...EUNOTIACEAE										
....EUNOTIA	*	0	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	--	-	26	7	--	-	--	-

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 10,77 1000		JUN 21,77 1015		JUL 20,77 1145		AUG 17,77 1010		SEP 21,77 1220	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
....FRAGILARIA	5	1	--	*	--	*	--	*	--	*
....HANNAEA	10	1	65#	13	16	4	--	*	6	1
....SYNEDRA	47	8	30	6	69#	18	16#	50	96	9
...GOMPHONEMATACEAE										
....GOMPHONEMA	21	3	30	6	5	1	--	*	11	1
...NAVICULACEAE										
....DIPLONEIS	--	*	--	*	5	1	--	*	--	*
....FRUSTULIA	--	*	--	*	--	*	--	*	--	*
....GYROSIGMA	4	1	--	*	--	*	--	*	--	*
....NAVICULA	26	4	20	6	--	*	--	*	19	2
....PINNULARIA	--	*	--	*	16	4	--	*	--	*
...NITZSCHIACEAE										
....HANTZSCHIA	--	*	--	*	--	*	--	*	--	*
....NITZSCHIA	12	2	5	1	--	*	12#	30	--	*
...SURIRELLACEAE										
....SURIRELLA	--	*	--	*	--	*	--	*	--	*
...TABELLARIACEAE										
....TABELLARIA	10	3	5	1	--	*	--	*	--	*
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	*	--	*	58	15	6	13	--	*
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	*	--	*	--	*	--	*	300#	30
....ANACYSTIS	--	*	--	*	--	*	--	*	--	*
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	*	--	*	--	*	--	*	--	*
....APHANIZOMENON	330#	56	--	*	--	*	--	*	--	*
...OSCILLATORIACEAE										
....LYNGBYA	--	*	130#	26	--	*	--	*	--	*
....OSCILLATORIA	15	2	--	*	--	*	--	*	--	*
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	*	--	*	--	*	--	*	170#	17
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	*	--	*	5	1	--	*	--	*

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
SAMPLING METHOD: 121

DATE	TIME	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERIPHYTON CHROMO-SPECT-METRIC (MG/M2)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2)	CHLOR-B PERIPHYTON CHROMO-SPECT-METRIC (MG/M2)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPOSURE (DAYS)
OCT 13...	0925	2190	4.02	6.15	.562	--	.062	--	21
JAN 10...	1040	13050	6.00	7.30	.100	--	.019	--	36
JUL 20...	1145	3755	20.7	31.4	--	.356	--	.719	29

SAMPLING METHOD--Polyethylene strip.

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	45	42	43	57	51	54	59	58	59	66	61	64
2	46	42	44	57	48	52	61	56	59	65	61	62
3	46	41	44	59	52	55	60	57	59	63	59	61
4	49	41	46	60	53	56	63	57	60	64	59	60
5	53	45	47	60	57	59	62	59	61	64	58	60
6	56	53	55	61	56	58	62	58	60	65	58	61
7	55	47	51	62	56	59	63	58	61	67	60	63
8	52	46	50	63	59	61	64	60	62	---	---	---
9	51	44	47	61	56	59	61	57	59	---	---	---
10	50	42	46	63	57	60	65	60	62	---	---	---
11	52	41	46	63	58	60	66	62	64	---	---	---
12	50	45	47	63	58	60	67	59	62	---	---	---
13	51	47	49	62	58	59	66	61	63	---	---	---
14	53	47	50	62	55	59	67	61	64	---	---	---
15	54	47	50	62	53	57	68	64	66	---	---	---
16	53	45	50	60	54	57	67	58	61	---	---	---
17	56	49	53	60	45	51	60	56	58	---	---	---
18	54	50	52	47	40	44	59	55	57	---	---	---
19	56	45	50	52	46	49	60	55	58	---	---	---
20	54	47	52	56	48	53	61	57	59	---	---	---
21	56	46	52	56	55	55	63	59	61	---	---	---
22	55	46	50	56	53	55	66	59	62	---	---	---
23	53	44	47	55	51	54	66	60	63	---	---	---
24	56	49	51	56	51	54	66	59	62	65	60	62
25	58	51	55	57	50	53	67	62	65	66	61	64
26	58	49	53	52	45	48	69	55	62	65	57	61
27	61	54	58	54	49	51	59	50	55	63	58	61
28	62	56	59	56	51	53	63	57	60	65	58	61
29	60	52	56	55	52	54	67	63	66	65	60	63
30	60	54	57	57	52	55	67	63	65	66	60	63
31	58	53	55	---	---	---	66	62	64	68	66	67
MONTH	62	41	50	63	40	55	69	50	61	68	57	62

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	68	63	66	65	63	64	67	63	65	52	49	50
2	68	63	66	66	63	65	68	64	66	51	46	48
3	67	62	65	67	64	65	68	66	67	47	43	45
4	71	65	68	66	61	64	68	66	67	49	45	47
5	73	66	69	65	61	63	67	63	65	53	49	51
6	73	68	71	66	61	63	65	62	63	56	51	53
7	73	66	69	66	59	61	---	---	---	57	54	55
8	74	65	70	61	58	59	---	---	---	57	53	56
9	75	67	71	60	57	58	---	---	---	57	53	55
10	73	67	70	62	58	59	---	---	---	56	52	54
11	69	62	66	66	61	62	---	---	---	52	49	50
12	66	60	63	63	61	62	---	---	---	55	49	52
13	63	53	57	65	60	62	---	---	---	56	54	55
14	61	52	57	65	62	64	---	---	---	57	53	55
15	61	51	57	65	61	63	---	---	---	57	54	55
16	59	52	55	66	62	64	---	---	---	57	53	56
17	59	55	57	70	66	68	---	---	---	59	52	55
18	60	54	57	70	66	68	---	---	---	59	55	57
19	61	55	59	69	67	68	62	61	62	59	57	58
20	63	58	60	67	63	65	64	61	63	59	57	58
21	65	61	62	68	63	65	64	62	63	60	54	57
22	66	63	64	68	62	65	64	62	63	55	49	51
23	66	62	64	66	62	64	62	59	60	53	50	52
24	66	62	64	63	61	62	59	51	55	54	49	51
25	66	64	65	64	61	63	58	45	48	57	51	55
26	67	65	66	64	61	63	46	42	44	57	56	56
27	67	64	65	64	61	62	50	43	46	57	55	56
28	67	64	65	---	---	---	53	47	50	56	52	53
29	---	---	---	---	---	---	53	50	51	55	50	53
30	---	---	---	---	---	---	52	48	50	56	54	55
31	---	---	---	67	63	65	---	---	---	57	51	54
MONTH	75	51	64	70	57	63	68	42	58	60	43	53

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	56	46	51	49	46	47	46	43	45	45	41	43
2	50	42	47	47	45	46	46	42	44	47	42	44
3	53	48	50	48	45	46	44	40	43	45	43	44
4	56	53	54	51	44	47	42	39	41	43	40	42
5	54	49	50	50	46	49	42	38	40	44	39	41
6	49	45	48	52	46	49	42	38	40	46	40	42
7	43	36	39	52	47	49	41	38	40	48	44	45
8	40	37	38	50	47	48	43	39	41	50	45	48
9	46	39	42	49	45	47	44	39	41	50	44	47
10	48	45	47	48	45	47	43	39	41	51	47	49
11	50	47	48	48	44	46	42	40	40	51	46	48
12	49	47	47	47	43	46	42	38	40	51	46	49
13	47	44	46	44	40	42	41	36	39	51	46	49
14	47	45	46	45	41	42	40	36	38	50	47	48
15	48	44	47	44	40	42	40	36	38	50	47	48
16	50	46	48	47	41	44	38	34	37	51	48	49
17	50	47	49	44	41	43	38	32	36	52	48	50
18	49	46	47	43	40	42	38	34	36	54	49	51
19	47	44	45	46	41	44	38	35	36	53	50	51
20	47	43	45	47	42	44	38	35	37	51	48	50
21	46	41	43	47	42	45	38	36	37	48	42	44
22	45	43	44	46	41	44	40	36	38	46	40	43
23	51	48	49	46	41	43	38	36	38	47	43	44
24	50	48	49	46	41	43	40	37	39	47	41	43
25	53	49	50	44	40	42	40	36	38	49	41	45
26	50	46	49	42	39	41	39	33	36	50	43	47
27	50	48	49	42	39	40	40	36	38	52	46	50
28	51	48	49	42	38	40	42	38	39	52	48	50
29	50	47	49	40	37	38	42	36	39	52	46	49
30	51	47	49	47	36	41	40	33	36	52	46	49
31	---	---	---	46	43	44	42	38	39	---	---	---
MONTH	56	36	47	52	36	44	46	32	39	54	39	47
YEAR	75	32	53									

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	11.5	12.0	10.0	8.5	9.0	6.5	6.0	6.5	4.5	3.5	4.0
2	12.0	11.5	12.0	9.0	8.0	8.5	7.0	6.5	6.5	4.0	4.0	4.0
3	11.5	11.0	11.0	9.5	8.0	8.5	7.0	6.5	6.5	5.0	4.0	4.5
4	11.5	10.0	11.0	10.0	8.5	9.0	7.0	6.5	6.5	4.5	3.5	4.0
5	11.5	11.0	11.0	8.5	8.0	8.5	7.0	6.5	7.0	4.0	3.5	3.5
6	11.5	10.0	11.0	9.0	8.0	8.5	7.5	7.0	7.0	5.0	3.5	4.0
7	12.0	11.0	11.5	9.0	8.0	8.5	7.5	7.0	7.5	4.0	3.5	3.5
8	12.5	11.0	12.0	9.5	8.0	9.0	7.5	7.5	7.5	---	---	---
9	12.0	11.5	12.0	10.5	9.0	10.0	7.5	6.5	7.0	---	---	---
10	12.0	11.5	12.0	10.5	9.5	10.0	7.0	6.5	7.0	---	---	---
11	12.5	11.0	12.0	10.0	8.5	9.5	7.5	7.0	7.0	---	---	---
12	12.0	11.0	11.5	9.5	8.5	9.0	7.0	7.0	7.0	---	---	---
13	11.5	11.0	11.0	8.5	7.5	8.0	7.0	6.5	7.0	---	---	---
14	11.5	10.5	11.0	8.5	7.5	8.0	7.5	7.0	7.0	---	---	---
15	11.0	9.0	10.0	9.0	7.5	8.5	8.0	7.0	7.5	---	---	---
16	9.5	8.5	9.0	10.0	8.5	9.5	8.0	7.5	8.0	---	---	---
17	9.5	8.0	8.5	10.0	8.5	9.5	7.5	7.5	7.5	---	---	---
18	8.5	7.5	8.0	8.5	8.0	8.5	7.5	6.5	7.0	5.5	4.5	5.0
19	9.0	8.0	8.5	8.0	7.5	8.0	6.5	5.0	6.0	4.5	4.0	4.5
20	8.5	7.5	8.0	8.0	7.0	7.5	6.0	5.0	5.5	4.5	4.0	4.5
21	8.5	7.5	8.0	8.0	7.5	7.5	6.5	5.5	6.0	5.0	4.5	4.5
22	9.0	7.5	8.0	8.0	7.5	7.5	6.5	6.0	6.5	4.5	4.5	4.5
23	9.0	8.0	9.0	8.5	7.5	8.0	7.0	6.0	6.5	4.5	4.0	4.0
24	9.5	8.0	9.0	8.5	8.0	8.5	6.5	5.5	6.0	4.0	3.0	3.5
25	9.0	8.0	8.5	8.5	7.0	8.0	6.0	5.5	6.0	3.5	3.0	3.5
26	10.0	8.5	9.5	7.0	6.0	6.5	7.0	6.0	6.5	4.0	3.0	3.5
27	9.5	8.5	9.0	6.0	5.0	5.5	6.5	5.5	6.0	3.5	3.0	3.0
28	10.0	9.5	9.5	6.0	5.0	5.5	5.5	5.0	5.5	3.5	3.5	3.5
29	10.5	9.0	10.0	6.0	5.0	5.5	6.0	5.0	5.5	3.5	3.0	3.5
30	9.5	8.5	9.0	6.5	6.0	6.0	5.5	4.5	5.0	3.5	3.0	3.5
31	9.5	8.5	9.0	---	---	---	5.0	4.0	4.5	4.5	3.5	4.0
MONTH	12.5	7.5	10.0	10.5	5.0	8.0	8.0	4.0	6.5	5.5	3.0	4.0

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	4.5	5.0	6.0	5.0	5.5	7.5	5.5	6.5	11.0	10.0	10.5
2	5.5	4.5	5.0	5.5	5.0	5.5	8.0	6.5	7.0	10.0	8.5	9.5
3	5.0	4.5	4.5	6.0	5.5	5.5	8.0	6.5	7.0	8.5	8.0	8.0
4	5.5	4.5	4.5	6.0	5.0	5.5	9.5	6.5	8.0	9.0	7.0	8.0
5	5.5	4.5	5.0	6.5	5.5	6.0	10.5	7.5	9.0	9.0	7.0	8.0
6	6.0	5.0	5.5	6.5	6.0	6.0	10.5	7.5	9.0	10.0	7.5	9.0
7	6.0	4.5	5.5	6.5	6.0	6.0	---	---	---	11.5	9.0	10.0
8	6.0	5.0	5.5	6.0	5.5	5.5	---	---	---	11.5	9.5	10.5
9	7.0	6.0	6.5	5.0	5.0	5.0	---	---	---	12.0	9.5	10.5
10	7.5	6.5	7.0	6.0	4.5	5.0	---	---	---	11.5	9.5	10.5
11	7.0	6.5	6.5	6.0	5.0	5.5	---	---	---	9.5	8.0	9.0
12	7.0	6.5	7.0	6.5	5.0	5.5	---	---	---	10.5	7.0	9.0
13	7.0	6.0	6.5	6.0	5.0	5.5	---	---	---	10.0	9.0	9.5
14	6.0	4.5	5.5	5.5	4.5	5.0	---	---	---	10.0	8.5	9.0
15	5.5	4.5	5.0	5.5	5.0	5.5	---	---	---	10.5	9.0	9.5
16	6.0	5.0	5.5	6.0	4.5	5.5	---	---	---	10.5	9.0	10.0
17	6.0	5.5	5.5	6.0	5.5	5.5	---	---	---	9.5	8.5	9.0
18	6.5	5.5	6.0	6.0	5.0	5.5	---	---	---	10.5	9.0	9.5
19	7.0	5.5	6.0	7.5	5.5	6.0	8.5	7.0	8.0	12.5	9.5	11.0
20	7.0	6.0	6.5	6.0	5.5	6.0	9.5	6.5	8.0	12.0	10.5	11.0
21	6.5	5.5	6.0	6.0	5.5	6.0	9.5	7.5	8.5	11.5	10.0	10.5
22	6.0	5.5	6.0	7.0	5.5	6.5	11.0	8.5	10.0	11.5	9.0	10.5
23	6.0	5.0	5.5	7.5	6.5	7.0	11.5	9.5	10.5	11.0	9.5	10.5
24	5.5	4.5	5.0	7.5	6.0	6.5	11.0	9.5	10.5	9.5	8.5	9.0
25	5.0	4.5	5.0	6.5	6.0	6.5	10.0	8.5	9.5	11.0	8.0	10.0
26	6.0	4.5	5.0	6.5	6.0	6.0	8.5	7.5	8.0	11.5	10.0	10.5
27	6.5	5.0	5.5	6.0	5.5	5.5	10.0	7.0	8.5	10.0	9.0	10.0
28	6.5	5.5	6.0	---	---	---	10.5	8.5	10.0	10.5	9.0	9.5
29	---	---	---	---	---	---	11.5	9.5	10.0	12.0	9.0	10.5
30	---	---	---	---	---	---	11.0	9.0	10.0	11.0	10.0	10.5
31	---	---	---	7.0	6.0	6.5	---	---	---	10.5	9.5	10.0
MONTH	7.5	4.5	5.5	7.5	4.5	6.0	11.5	5.5	9.0	12.5	7.0	10.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.0	9.0	9.5	14.0	12.5	13.5	18.0	14.0	16.0	14.0	11.5	13.0
2	10.5	9.0	9.5	12.5	11.0	12.0	18.5	14.5	16.5	13.5	12.0	13.0
3	11.5	10.0	10.5	12.0	11.0	11.0	18.5	14.5	16.5	13.5	12.0	13.0
4	11.0	9.5	10.0	13.0	10.0	11.0	18.5	14.5	16.5	14.5	12.5	13.5
5	12.5	9.5	10.5	14.0	11.0	12.5	18.5	14.5	16.5	15.0	13.0	14.0
6	14.0	11.5	12.5	14.0	11.0	12.5	18.0	14.5	16.0	15.0	12.0	13.5
7	13.5	12.0	13.0	15.0	11.5	13.0	17.5	14.0	15.5	14.5	12.5	13.5
8	13.0	11.5	12.0	16.5	12.0	14.0	18.0	14.5	16.0	14.5	12.0	13.0
9	13.0	10.0	11.0	15.0	12.5	13.5	18.0	14.5	16.0	14.5	12.0	13.5
10	14.0	10.5	12.0	14.5	11.5	13.0	18.0	14.0	16.0	15.5	12.5	13.5
11	14.5	11.5	13.0	13.5	12.0	12.5	18.0	14.0	16.0	15.0	12.5	14.0
12	14.5	12.0	13.0	13.5	11.0	12.0	19.0	14.5	16.5	15.5	12.5	14.5
13	14.5	12.0	13.0	14.0	11.0	12.0	18.5	14.5	16.5	15.5	13.0	14.5
14	15.0	12.0	13.5	15.5	11.0	13.0	17.0	14.0	15.5	14.5	13.0	14.0
15	14.0	12.5	13.0	15.5	12.5	14.0	18.0	13.5	15.5	14.0	12.5	13.0
16	14.5	12.0	13.0	14.5	13.0	13.5	17.5	14.0	16.0	13.5	11.5	12.5
17	16.0	13.0	14.5	13.0	11.5	12.0	18.0	13.5	16.0	13.0	10.5	11.5
18	15.5	13.5	14.5	15.5	11.5	13.0	16.5	13.5	15.0	12.5	11.5	12.0
19	14.5	13.0	14.0	16.5	11.5	14.0	15.5	13.0	14.0	13.0	11.0	12.0
20	14.0	12.5	13.0	16.5	12.5	14.5	16.0	13.5	14.5	13.0	11.5	12.0
21	13.0	12.0	12.5	16.5	13.5	15.0	15.0	13.5	14.0	13.0	12.0	12.5
22	14.5	11.5	13.0	17.0	13.5	15.0	13.5	12.5	13.0	13.5	11.5	12.0
23	15.0	12.0	13.5	17.5	13.0	15.0	13.5	13.0	13.5	13.0	11.5	12.5
24	14.5	12.5	13.5	17.5	14.0	15.5	13.0	12.0	12.5	12.5	10.5	11.5
25	14.0	12.0	13.0	16.5	13.5	15.0	12.5	11.5	11.5	12.0	10.5	11.5
26	14.0	12.0	13.0	17.0	13.5	15.0	12.5	11.0	11.5	12.5	11.5	12.0
27	14.5	11.5	13.0	16.5	13.5	15.0	13.5	11.0	12.5	12.5	11.5	12.0
28	14.0	12.5	13.0	16.5	14.5	15.0	13.5	12.0	12.5	12.0	11.5	11.5
29	15.5	11.5	13.5	15.5	13.0	14.0	14.0	11.5	13.0	12.5	11.5	12.0
30	16.5	12.0	14.0	16.0	13.0	14.5	13.5	11.0	12.0	12.5	11.0	12.0
31	---	---	---	17.5	14.0	15.5	14.5	11.0	13.0	---	---	---
MONTH	16.5	9.0	12.5	17.5	10.0	13.5	19.0	11.0	14.5	15.5	10.5	13.0
YEAR	19.0	3.0	9.5									

12201500 SAMISH RIVER NEAR BURLINGTON, WA

LOCATION.--Lat 48°32'46", long 122°20'13", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110002, at Interstate Highway bridge, 500 ft (152 m) upstream from former gaging station, and 5.0 mi (8.0 km) north of Burlington.

DRAINAGE AREA.--87.8 mi² (227.4 km²).

PERIOD OF RECORD.--Water years 1959-70, 1973-74, October 1976 to September 1977.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1973 to April 1974.

REMARKS.--Prior to October 1973 samples taken at site 0.2 mi (0.3 km) upstream.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
12...	1450	43	110	7.4	12.5	46	3	10.7	.57	.07	.03	.01
25...	1520	150	92	7.4	10.1	150	8	10.6	1.0	.12	.06	.01
NOV												
09...	1455	92	100	7.4	13.0	55	3	10.4	.66	.07	.03	.01
17...	1430	298	90	7.2	10.4	150	30	10.4	1.1	.15	.11	.01
DEC												
07...	1430	560	95	7.4	6.7	130	30	12.2	2.5	.18	.17	.01
21...	1310	245	118	7.9	6.5	46	5	12.5	1.3	.09	.03	.01
JAN												
12...	1745	300	75	7.2	3.0	70	15	12.3	1.6	.17	.07	.01
25...	1340	265	110	7.4	4.0	29	8	13.5	1.4	.12	.03	.00
FEB												
02...	1335	167	96	7.4	6.0	25	4	12.4	1.1	.05	.03	.00
22...	1430	167	91	7.2	7.2	65	10	11.4	1.1	.07	.04	.00
MAR												
15...	1400	320	80	7.4	6.7	42	5	12.3	1.3	.07	.03	.01
30...	1525	315	75	7.3	7.9	30	8	9.0	1.3	.04	.04	.00
APR												
12...	1350	210	85	7.3	9.6	46	5	11.5	1.0	.06	.03	.01
25...	1720	340	62	7.3	10.3	95	20	10.6	.83	.07	.07	.01
MAY												
10...	1500	135	86	7.2	11.0	29	4	10.6	.85	.05	.04	.01
24...	1320	380	74	7.4	10.3	95	25	11.0	.84	.19	.11	.01
JUN												
14...	1515	92	92	7.5	13.9	29	4	10.5	.89	.05	.02	.00
28...	1415	51	108	7.4	15.0	42	3	11.2	.98	.06	.01	.00
JUL												
06...	1520	45	115	7.9	15.1	21	2	12.2	.85	.05	.02	.00
19...	1750	47	108	7.5	16.3	33	3	10.6	.84	.04	.03	.00
AUG												
02...	1540	32	120	9.0	19.8	17	3	10.5	.91	.09	.03	.00
15...	1600	23	130	7.5	18.7	17	20	10.4	.93	.04	.03	.00
SEP												
07...	1610	34	128	--	14.4	33	3	11.0	.85	.04	.03	.01
20...	1610	28	119	7.5	12.8	21	2	10.5	.88	.02	.03	.00

12203550 WHATCOM CREEK AT BELLINGHAM, WA

LOCATION.--Lat 48°45'18", long 122°28'53", in SW¼NW¼ sec.30, T.38 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, 600 ft (183 m) upstream from Holly Street in Bellingham.

DRAINAGE AREA.--64.7 mi² (167.6 km²).

PERIOD OF RECORD.--Water years 1973, October 1976 to September 1977 (discontinued).

REMARKS.--No discharge records available.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT											
12...	1540	95	7.7	15.5	17	3	10.5	.08	.05	.04	.01
26...	1620	109	7.6	12.5	29	3	10.6	.15	.06	.04	.01
NOV											
09...	1535	80	7.4	12.2	13	1	10.7	.06	.08	.03	.01
17...	1530	170	7.4	11.4	150	35	10.4	.35	.36	.17	.01
DEC											
07...	1535	190	7.5	8.7	150	35	11.9	.88	.27	.17	.01
21...	1440	155	7.6	7.5	29	5	12.6	.55	.12	.06	.01
JAN											
13...	1020	160	7.2	3.9	65	15	13.1	1.1	.21	.07	.01
25...	1445	81	7.4	5.6	17	4	13.3	.39	.07	.02	.00
FEB											
02...	1430	150	7.7	6.7	29	3	12.7	.90	.07	.04	.01
22...	1515	146	7.2	7.3	180	45	11.6	.50	.31	.28	.03
MAR											
15...	1500	65	7.6	7.8	17	4	12.4	.52	.05	.02	.01
31...	0945	95	7.5	7.5	75	7	11.7	1.0	.22	.08	.01
APR											
12...	1435	79	7.4	10.3	17	4	11.5	.41	.04	.02	.00
27...	0845	115	7.7	10.3	42	3	11.1	.75	.06	.04	.01
MAY											
10...	1530	130	8.2	12.4	25	4	10.7	.44	.05	.04	.01
24...	1400	65	7.6	13.9	13	4	10.7	.21	.05	.02	.00
JUN											
14...	1555	70	7.7	19.0	13	3	9.7	.18	.04	.01	.00
28...	1500	130	8.6	18.0	33	2	10.1	.25	.07	.02	.01
JUL											
06...	1605	125	7.7	17.6	13	1	10.2	.32	.05	.04	.01
19...	1855	128	7.6	18.6	17	3	9.6	.24	.05	.03	.00
AUG											
02...	1625	125	8.0	21.9	17	3	9.5	.34	.09	.04	.01
16...	1645	118	7.8	21.9	21	3	9.5	.27	.03	.04	.01
SEP											
08...	1030	118	7.6	14.7	13	2	10.6	.06	.07	.03	.00
28...	1655	143	7.3	15.5	42	30	9.7	.24	.29	.14	.02

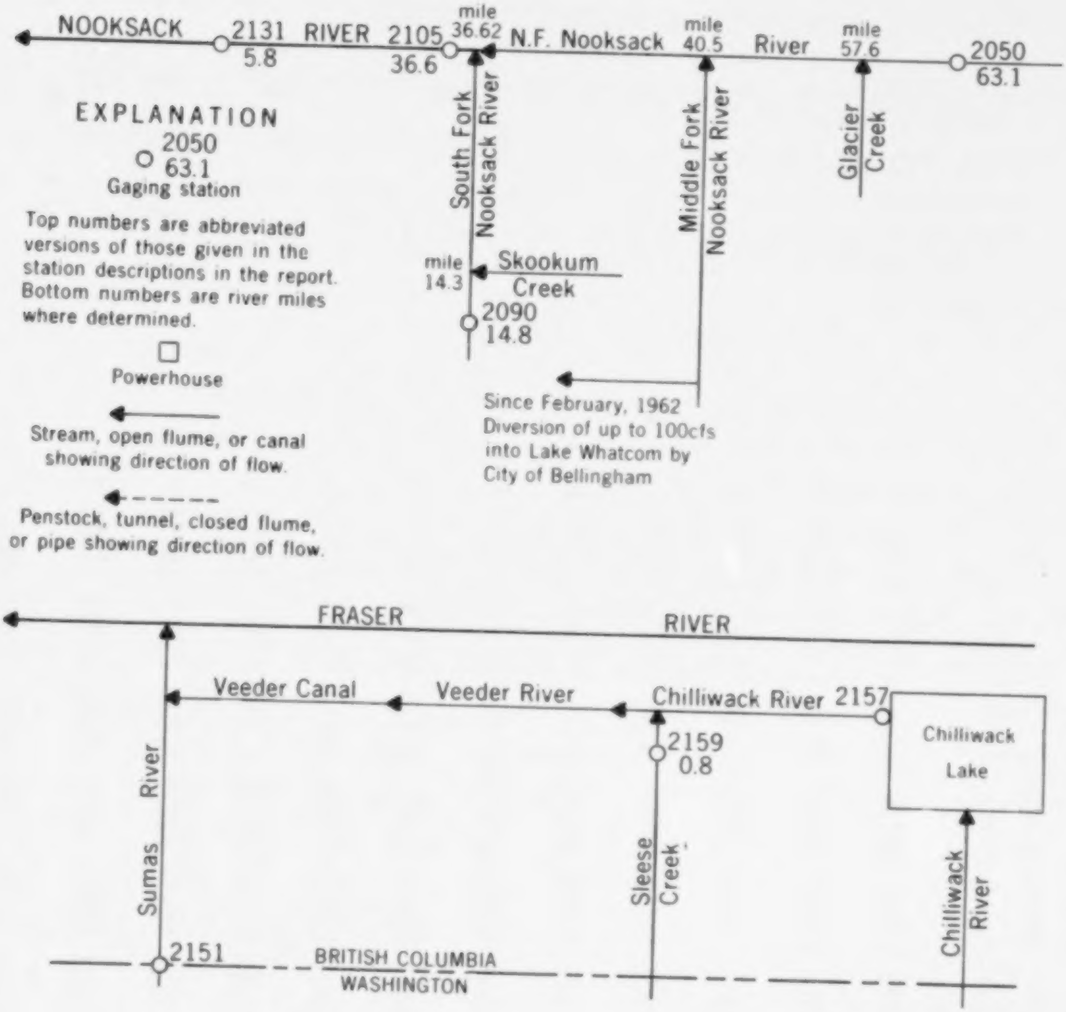
NOOKSACK
2131
5.8
RIVER
2105
36.6
mile
36.62
N.F. Nooksack
mile
40.5
River
mile
57.6
2050
63.1
South Fork
Nooksack River
Middle Fork
Nooksack River
Glacier
Creek
mile
14.3
Skookum
Creek
2090
14.8
Since February, 1962
Diversion of up to 100cfs
into Lake Whatcom by
City of Bellingham
EXPLANATION
2050
63.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
FRASER
RIVER
Veeder Canal
Veeder River
Chilliwack River
2157
Chilliwack
Lake
2159
0.8
Sumas
River
Sleese
Creek
Chilliwack
River
2151
BRITISH COLUMBIA
WASHINGTON

Figure 18. Gaging stations in Nooksack and Fraser River basins.

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

LOCATION.--Lat 48°54'22", long 121°50'35", in SE¼SW¼ sec.36, T.40 N., R.7 E., Whatcom County, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi (0.3 km) downstream from Cascade Creek, 0.3 mi (0.5 km) downstream from Deadhorse Creek, 4.8 mi (7.7 km) east of Glacier, 5.5 mi (8.8 km) upstream from Glacier Creek, and at mile 63.1 (101.5 km).

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.--October 1937 to current year. Published as Nooksack River above Cascade Creek, near Glacier 1937-58 and as Nooksack River below Cascade Creek, near Glacier 1958-66.

REVISED RECORDS.--WSP 1092: 1946.

GAGE.--Water-stage recorder. Altitude of gage is 1,245 ft (379.5 m), from river-profile map. Supplementary water-stage recorder on left bank at datum 1.19 ft (0.363 m) lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Records good except those for period of no gage-height record which are fair. No diversion above station. Some regulation at low flow by powerplant at Excelsior.

AVERAGE DISCHARGE.--40 years, 778 ft³/s (22.03 m³/s), 100.62 in/yr (2,556 mm/yr), 563,700 acre-ft/yr (695 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s (292 m³/s) Nov. 26, 1949, gage height, 10.50 ft (3.200 m), supplementary gage, from rating curve extended above 2,900 ft³/s (82.1 m³/s) on basis of contracted opening measurement at gage height 8.13 ft (2.478 m), supplementary gage; minimum, 60 ft³/s (1.70 m³/s) Mar. 12, 1969; minimum daily, 110 ft³/s (3.12 m³/s) Feb. 13, 1949.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s (102 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 1	0230	*3,120	88.4	*6.45	1.966

Minimum discharge, 79 ft³/s (2.24 m³/s) Feb. 2, gage height, 1.92 ft (0.585 m) caused by regulation: minimum daily, 190 ft³/s (5.38 m³/s) Jan. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	620	630	260	310	245	284	194	989	2210	967	918	462
2	605	413	246	290	231	264	191	1110	1340	890	967	600
3	510	390	235	270	221	253	201	1110	1040	765	1070	835
4	421	363	221	260	221	238	238	868	1550	660	1080	939
5	421	327	214	250	211	231	313	710	1570	680	1000	796
6	430	296	280	235	204	268	466	600	2000	540	983	605
7	453	296	453	225	204	457	720	575	2260	530	950	505
8	490	292	605	210	201	520	918	625	1900	630	901	448
9	466	309	453	200	221	453	730	705	1370	655	928	421
10	813	296	403	195	430	358	580	813	1260	590	950	413
11	796	272	430	190	408	304	490	765	1320	690	1010	421
12	605	249	394	225	735	313	435	625	1400	775	1080	435
13	540	231	367	201	645	284	530	595	1360	660	1080	457
14	448	224	331	194	444	264	457	625	1290	625	1060	457
15	390	284	462	194	376	246	421	560	1220	675	994	408
16	345	595	485	204	367	220	413	560	1230	884	950	372
17	309	923	690	665	394	217	358	520	1390	1190	945	336
18	280	595	530	2260	372	211	340	555	1540	846	873	331
19	260	444	435	1080	340	207	313	635	1510	705	791	645
20	253	367	399	750	363	198	296	665	1300	690	818	1060
21	238	345	363	595	466	207	288	978	1190	745	835	665
22	228	304	349	490	421	224	457	879	1290	775	730	466
23	214	300	331	440	372	318	760	895	1140	765	813	471
24	256	453	304	385	336	276	1240	796	1120	829	1020	444
25	358	580	715	350	313	249	1620	700	1190	939	939	376
26	284	358	1100	336	292	246	1500	879	1060	950	725	336
27	260	318	620	313	288	242	1060	710	923	1010	560	304
28	349	300	475	288	300	228	945	615	972	1040	765	284
29	309	284	400	264	---	217	961	555	939	923	851	276
30	260	272	360	256	---	211	939	515	906	700	605	260
31	710	---	330	260	---	287	---	1270	---	862	500	---
TOTAL	12921	11230	13240	12385	9622	8423	18374	23002	40790	24185	27691	14828
MEAN	417	374	427	400	344	272	612	742	1360	780	893	494
MAX	813	923	1100	2260	735	520	1620	1270	2260	1190	1080	1060
MIN	214	224	214	190	201	198	191	515	906	530	500	260
CFSM	3.97	3.56	4.07	3.81	3.28	2.59	5.83	7.07	13.0	7.43	8.51	4.71
IN.	4.58	3.98	4.69	4.39	3.41	2.98	6.51	8.15	14.45	8.57	9.81	5.25
AC-FT	25630	22270	26260	24570	19090	16710	36440	45620	80910	47970	54930	29410

CAL YR 1976 TOTAL 288257 MEAN 788 MAX 2590 MIN 130 CFSM 7.51 IN 102.13 AC-FT 571800
WTR YR 1977 TOTAL 216691 MEAN 594 MAX 2260 MIN 190 CFSM 5.66 IN 76.77 AC-FT 429800

12209000 SOUTH FORK NOOKSACK RIVER NEAR WICKERSHAM, WA

LOCATION.--Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 0.5 mi (0.8 km) upstream from Skookum Creek, 3.7 mi (6.0 km) east of Wickersham, and at mile 14.8 (23.8 km).

DRAINAGE AREA.--103 mi² (267 km²).

PERIOD OF RECORD.--October 1933 to September 1977 (discontinued).

REVISED RECODS.--WSP 832: 1935-36.

GAGE.--Water-stage recorder. Altitude of gage is 385 ft (117.3 m), from river-profile map. Prior to July 9, 1934, nonrecording gage, at same site and datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--44 years, 741 ft³/s (20.99 m³/s), 97.70 in/yr (2,482 mm/yr), 536,900 acre-ft/yr (662 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s (547 m³/s) Nov. 3, 1955, gage height, 13.40 ft (4.084 m), from rating curve extended above 11,000 ft³/s (312 m³/s); minimum, 66 ft³/s (1.87 m³/s) Oct. 9, 1940, Sept. 11-13, 1944; minimum gage height, 1.80 ft (0.549 m) Sept. 16, 17, 1973.

EXTREMES FOR CURRRENT YEAR.--Peak discharges above base of 5,200 ft³/s (147 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	0900	*7,370	209	*8.44	2.573

Minimum discharge, 104 ft³/s (2.95 m³/s) Aug. 22, gage height, 1.98 ft (0.604 m) from minimum stage indicator.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	1050	283	480	382	477	376	908	2160	247	146	193
2	180	519	266	438	338	410	360	1050	1460	234	144	202
3	224	386	252	404	313	396	353	1100	952	245	144	427
4	172	327	239	368	302	360	392	850	963	266	150	393
5	168	290	227	345	299	337	548	700	886	224	148	314
6	174	264	349	325	282	463	841	620	1020	219	147	240
7	150	244	1630	310	277	799	1160	600	989	200	142	205
8	151	234	1600	300	268	1050	1380	640	772	197	138	185
9	147	221	1180	285	274	926	953	640	587	201	136	180
10	330	210	738	275	753	792	720	700	564	190	140	175
11	518	201	726	270	936	594	666	680	558	202	146	170
12	265	193	660	520	1110	588	559	527	537	234	160	168
13	208	186	654	384	966	490	785	528	510	211	158	166
14	185	181	531	396	547	434	630	586	485	190	156	170
15	168	333	594	460	438	396	559	627	457	182	150	170
16	158	1030	672	564	399	360	526	621	434	211	144	160
17	150	1310	1340	2040	456	334	465	523	458	777	140	155
18	144	738	1470	4390	579	326	450	501	462	320	130	158
19	138	475	806	1340	455	319	425	506	430	236	120	190
20	134	380	686	911	420	319	405	530	377	208	120	480
21	130	357	505	702	566	376	390	1070	339	197	128	490
22	127	337	451	589	797	570	920	727	365	185	110	320
23	125	304	485	498	699	869	700	694	331	177	120	290
24	150	526	420	443	507	648	1200	800	314	170	560	430
25	1030	1090	429	486	455	526	1550	637	341	170	610	290
26	577	505	3400	379	425	520	1650	819	294	167	400	260
27	330	392	2000	346	462	666	1100	595	268	164	230	230
28	363	341	1050	326	535	495	910	523	271	165	320	210
29	330	319	813	308	---	438	900	473	267	181	670	218
30	266	297	654	297	---	404	860	447	244	159	307	202
31	1250	---	548	363	---	396	---	1500	---	149	231	---
TOTAL	8606	13240	25578	19462	14240	16078	22333	21714	18095	6878	6545	7433
MEAN	278	441	825	628	509	519	744	700	603	222	211	248
MAX	1250	1310	3400	4390	1110	1050	1650	1500	2160	777	670	490
MIN	125	181	227	270	268	319	353	447	244	149	110	150
CFSM	2.70	4.28	8.01	6.10	4.94	5.04	7.22	6.80	5.85	2.16	2.05	2.41
IN.	3.11	4.78	9.24	7.03	5.14	5.81	8.07	7.84	6.54	2.48	2.36	2.68
AC-FT	17070	26260	50730	38600	28250	31890	44300	43070	35890	13640	12980	14740

CAL YR 1976 TOTAL 254731 MEAN 696 MAX 3500 MIN 125 CFSM 6.76 IN 92.00 AC-FT 505300
WTR YR 1977 TOTAL 180202 MEAN 494 MAX 4390 MIN 110 CFSM 4.80 IN 65.08 AC-FT 357400

12210500 NOOKSACK RIVER AT DEMING, WA

LOCATION.--Lat 48°48'38", long 122°12'13", in lot 12, NE¼SE¼ sec.6, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 800 ft (240 m) downstream from South Fork, 1.1 m (1.8 km) southeast of Deming, and at mile 36.6 (58.9 km).

DRAINAGE AREA.--584 mi² (1,513 km²), includes 5 mi² (13 km²) in Canada.

PERIOD OF RECORD.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1964, discharges above 3,500 ft³/s (99.1 m³/s) only, October 1964 to current year. Published as "near Deming" 1910-11. Chemical analyses July 1959 to September 1971, October 1973 to September 1974, at site 5.7 mi (9.2 km) downstream from gaging station.

REVISED RECORDS.--WSP 1286: 1951. WSP 1736: 1937(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 204.2 ft (62.24 m), above mean sea level. Prior to Dec. 5, 1910, nonrecording gage at site 1.1 mi (1.8 km) downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, nonrecording gage at site 5 mi (8.0 km) downstream at different datum. July 20 to Sept. 19, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good. Slight regulation by powerplant at Excelsior. Since February 1962, city of Bellingham diverts up to about 100 ft³/s (2.83 m³/s) from the Middle Fork for municipal use.

AVERAGE DISCHARGE.--35 years (water years 1936-57, 1965-77), 3,389 ft³/s (95.98 m³/s), 78.81 in/yr (2,002 mm/yr) 2,455,000 acre-ft/yr (3,030 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s (1,220 m³/s) Feb. 10, 1951, gage height, 15.69 ft (4.782 m), from rating curve extended above 25,000 ft³/s (708 m³/s); maximum gage height, 15.89 ft (4.843 m) Dec. 3, 1975; minimum recorded, 502 ft³/s (14.2 m³/s) Nov. 29, 1952, gage height, 3.72 ft (1.134 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Mar. 15, 1908, reportedly reached a stage of 20 ft (6.1 m). Peak of Feb. 27, 1932, reached a stage of 16.8 ft (5.12 m), from floodmarks, discharge, 49,300 ft³/s (1,400 m³/s). Peak of November 1909 reached a stage about equal to that of the 1932 peak.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*).

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	1200	*21,400	606	*12.29	(3.746)

Minimum discharge, 788 ft³/s (22.3 m³/s) Oct. 24, gage height, 5.31 ft (1.618 m); minimum gage height, 5.05 ft (1.539 m) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1610	3840	1330	2300	1980	2350	1970	4080	8090	2600	2040	1610
2	1580	2340	1260	2100	1730	2130	1880	4620	5900	2240	2090	1640
3	1610	1900	1100	1900	1650	2060	1830	4970	4340	2040	2260	2390
4	1320	1660	1120	1700	1590	1910	2000	3820	4400	1920	2360	2330
5	1260	1500	1060	1600	1560	1820	2530	3190	4470	1700	2270	2300
6	1320	1360	1260	1500	1500	2080	3330	2770	5200	1600	2210	1770
7	1290	1280	4850	1450	1480	3220	4230	2660	5700	1500	2140	1500
8	1390	1270	5010	1380	1450	4270	5070	2840	5050	1610	2080	1370
9	1360	1210	4700	1320	1540	3880	3920	2850	3820	1720	2060	1320
10	2100	1100	3330	1280	2530	3580	3170	3170	3490	1590	2150	1290
11	3080	1100	3250	1250	3490	3000	2930	3110	3540	1710	2190	1250
12	2030	1030	3020	1850	3880	3040	2610	2600	3560	1900	2400	1240
13	1730	964	2790	1610	4100	2670	3060	2430	3490	1790	2390	1230
14	1480	924	2450	1670	2790	2430	2850	2660	3380	1650	2390	1240
15	1290	1300	2690	1790	2380	2300	2680	2640	3220	1670	2300	1230
16	1170	2300	3020	1970	2100	2120	2660	2840	3140	1920	2100	1190
17	1070	4060	3690	5400	2270	1970	2380	2630	3400	3920	2130	1140
18	996	3040	5180	15200	2530	1890	2260	2520	3630	2610	2030	1080
19	956	2240	3490	7490	2240	1830	2090	2540	3630	2020	1800	1290
20	924	1850	2930	4950	2130	1840	1960	2570	3290	1850	1800	2500
21	892	1710	2620	3940	2850	2130	1910	3860	2900	1900	1900	2560
22	852	1630	2370	3360	3220	2600	2600	3600	3110	1920	1710	1640
23	812	1470	2540	3000	3310	3490	3900	3290	2880	1900	1790	1520
24	892	2020	2310	2700	2660	2950	5300	3620	2790	1920	2670	2210
25	2430	4080	2260	2470	2430	2590	6100	3170	3000	2150	2960	1570
26	2100	2440	7900	2310	2280	2600	6270	3560	2710	2150	2330	1330
27	1420	1910	5130	2150	2320	3060	4800	3030	2490	2310	1720	1210
28	1730	1690	4300	2020	2490	2530	4180	2660	2400	2430	2160	1130
29	1750	1540	3400	1900	---	2270	4120	2460	2490	2300	3290	1160
30	1360	1420	2900	1820	---	2120	3080	2260	2280	1860	2030	1070
31	3360	---	2600	1860	---	2080	---	3980	---	1960	1600	---
TOTAL	47164	56330	95940	87240	66480	78810	98450	97000	111750	62240	67430	45010
MEAN	1521	1878	3095	2814	2374	2542	3282	3129	3725	2008	2175	1530
MAX	3360	4080	7900	15200	4100	4270	6270	4970	8090	3920	3290	2560
MIN	812	924	1060	1250	1450	1820	1830	2260	2280	1500	1600	1070
CFSM	2.60	3.22	5.30	4.82	4.07	4.35	5.62	5.36	6.38	3.44	3.72	2.62
IN.	3.00	3.59	6.11	5.56	4.23	5.02	6.27	6.18	7.12	3.96	4.30	2.92
AC-FT	93550	111700	190300	173000	131900	156300	195300	192400	221700	123500	133700	91060

CAL YR 1976 TOTAL 1227102 MEAN 3353 MAX 14600 MIN 812 CFSM 5.74 IN 78.17 AC-FT 2434000
WTR YR 1977 TOTAL 914752 MEAN 2506 MAX 15200 MIN 812 CFSM 4.29 IN 58.27 AC-FT 1814000

12211500 NOOKSACK RIVER NEAR LYNDEN, WA

LOCATION.--Lat 48°55'14", long 122°29'04", in NE¼NE¼ sec.36, T.40 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, at Guide Meridian Road bridge, 150 ft (46 m) upstream from former gaging station and 2.0 mi (3.2 km) southwest of Lynden.

DRAINAGE AREA.--648 mi² (1,678 km²).

PERIOD OF RECORD.--Water years 1974, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
13...	0900	1070	93	7.3	9.4	25	10	10.8	.09	.08	.08	.02
27...	0905	1540	100	7.5	7.4	70	6	11.0	.23	.06	.04	.00
NOV												
10...	0915	1230	113	7.8	8.3	17	3	11.1	.18	.05	.03	.00
19...	0830	3400	75	7.4	5.8	120	55	11.6	.32	.27	.14	.01
DEC												
08...	0810	4500	78	7.3	6.8	100	55	12.2	.55	.28	.16	.00
22...	0815	2520	105	7.5	5.3	25	5	10.1	.47	.08	.02	.00
JAN												
13...	0845	1690	95	7.3	2.7	33	10	12.8	.58	.12	.05	.00
26...	0810	2470	122	7.2	2.4	21	6	13.0	.49	.07	.02	.01
FEB												
03...	0815	1710	130	7.5	3.7	17	3	12.2	.40	.05	.02	.00
23...	0850	3590	85	7.3	4.3	95	30	12.4	.62	.13	.12	.01
MAR												
16...	0815	2250	111	7.5	3.9	21	4	12.2	.60	.06	.02	.01
31...	1050	2100	110	7.6	7.6	30	4	11.7	.49	.04	.02	.00
APR												
13...	0850	3200	100	7.4	7.0	25	5	11.5	.32	.04	.08	.02
27...	1015	5170	70	7.5	8.3	55	30	11.6	.24	.06	.10	.01
MAY												
11...	0950	3380	80	6.9	7.9	25	7	11.5	.17	.04	.03	.00
25...	0830	3440	80	7.5	8.4	33	7	11.2	.17	.08	.04	.00
JUN												
15...	0910	3490	80	7.6	11.0	25	15	10.3	.23	.06	.06	.00
29...	0815	2700	84	7.2	12.0	42	25	10.6	.10	.12	.07	.01
JUL												
07...	0930	1590	100	7.2	12.6	8	5	11.0	.14	.06	.03	.00
20...	0925	1980	94	7.4	13.8	29	30	10.4	.12	.16	.12	.02
AUG												
03...	0910	2380	80	6.9	16.5	25	75	9.7	.09	.27	.16	.01
17...	0925	2160	75	7.1	14.5	42	40	10.6	.07	.30	.20	.01
SEP												
08...	1130	1430	100	7.7	12.6	21	15	11.2	.13	.07	.04	.00
21...	0955	2950	72	7.3	9.9	46	25	11.2	.12	.12	.12	.00

12213095 NOOKSACK RIVER NEAR FERNDALE, WA

LOCATION.--Lat 48°51'14", long 122°34'55", in NW¼SE¼ sec.20, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, at Interstate Highway 5 bridge, 0.6 mi (1.0 km) northeast of Ferndale and at mile 6.6 (10.6 km).

DRAINAGE AREA.--786 mi² (2,036 km²).

PERIOD OF RECORD.--1971, 1974, October 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L)
OCT												
13...	0835	1950	95	6.9	10.3	29	15	10.4	.09	.08	.05	.00
27...	0825	1810	110	7.4	8.3	85	7	10.6	.25	.12	.05	.01
NOV												
10...	0850	1460	110	6.4	8.4	17	4	10.6	.26	.04	.03	.00
19...	0805	5030	80	7.5	6.3	150	100	11.3	.41	.14	.26	.01
DEC												
09...	0750	6970	60	7.3	6.9	130	55	12.1	.71	.30	.18	.01
22...	0755	2620	128	7.5	5.3	29	6	12.6	.58	.17	.03	.00
JAN												
13...	0800	2260	125	7.2	2.4	42	19	13.0	.67	.21	.07	.01
25...	0740	2780	135	7.3	2.8	33	6	12.6	.63	.08	.03	.00
FEB												
03...	0750	1880	135	7.3	3.8	17	4	12.0	.52	.07	.02	.00
23...	0825	4340	92	7.3	4.5	110	45	12.0	.62	.16	.15	.01
MAR												
15...	0750	2630	125	7.4	4.0	29	4	12.0	.67	.08	.03	.01
31...	1030	2190	130	7.7	7.7	39	5	11.3	.58	.04	.02	.00
APR												
13...	0820	2620	105	7.4	8.3	29	5	11.1	.39	.08	.03	.00
27...	0945	6030	72	7.2	8.0	65	30	11.4	.28	.04	.21	.01
MAY												
11...	0925	3240	84	6.4	8.4	29	6	11.0	.26	.04	.03	.01
25...	0805	3750	74	7.2	9.2	38	7	10.9	.19	.06	.03	.01
JUN												
15...	0845	3740	76	7.5	13.2	25	15	9.8	.54	.07	.04	.00
29...	0755	2720	84	7.3	13.7	33	20	10.1	.22	.11	.05	.00
JUL												
07...	0900	1570	107	7.0	13.1	13	7	10.5	.11	.05	.03	.01
20...	0805	1870	95	7.2	14.5	38	30	9.7	.20	.17	.07	.01
AUG												
03...	0840	2110	87	7.0	17.5	21	30	9.1	.11	.24	.08	.01
17...	0830	2100	81	7.1	16.0	33	50	9.8	.09	.20	.16	.00
SEP												
08...	1045	1380	100	7.7	13.4	21	19	10.7	.14	.05	.10	.00
21...	0915	2060	80	7.3	10.5	46	35	10.9	.08	.13	.16	.00

12213100 NOOKSACK RIVER AT FERNDALE, WA

LOCATION.--Lat 48°50'42", long 122°35'17", in NE¼NW¼ sec.29, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, on right bank 300 ft (91 m) downstream from highway bridge at Ferndale and 5.8 mi (9.3 km) upstream from mouth.

DRAINAGE AREA.--786 mi² (2,036 km²), of which 48.9 mi² (126.7 km²) is in Canada.

PERIOD OF RECORD.--October 1966 to current year. Chemical analyses October 1961 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is 4.61 ft (1.405 m) above mean sea level. Prior to July 18, 1968, at site 220 ft (67 m) upstream at datum 4.21 ft (1.283 m) higher.

REMARKS.--Records good. Slight regulation by powerplant at Excelsior. City of Bellingham diverts up to about 100 ft³/s (2.83 m³/s) at times from Middle Fork Nooksack River for municipal use.

AVERAGE DISCHARGE.--11 years, 4084 ft³/s (115.7 m³/s), 70.56 in/yr (1,792 mm/yr), 2,959,000 acre-ft/yr (3,650 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) Dec. 3, 1975, gage height, 21.97 ft (6.696 m); minimum, 718 ft³/s (20.3 m³/s) Nov. 5, 1974, gage height, 3.03 ft (0.924 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 18	2100	*20,600	583	*15.94	4.859

Minimum daily discharge, 1,000 ft³/s (28.3 m³/s) Oct. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1800	5130	1670	2800	2140	2660	2140	4330	9510	2430	1910	1650
2	1730	2980	1590	2550	1970	2300	1990	4550	7870	2370	1930	1360
3	1800	2280	1480	2370	1850	2210	1900	5660	5570	2100	2060	2180
4	1600	2000	1400	2160	1760	2080	1920	4650	4980	2050	2200	2160
5	1420	1820	1350	1940	1720	1920	2220	3750	5300	1830	2200	2490
6	1480	1690	1460	1820	1640	2080	2930	3190	5560	1680	2100	1490
7	1440	1570	4510	1730	1590	3240	3850	2910	6680	1560	2030	1560
8	1500	1560	6470	1620	1560	5120	5190	2970	6270	1560	1990	1530
9	1540	1490	6800	1550	1560	4670	4940	2960	4690	1600	1910	1630
10	1790	1460	4360	1480	1960	4700	3610	3220	4050	1630	1960	1360
11	3120	1400	3810	1470	3730	3620	3200	3340	4000	1600	1990	1370
12	2360	1320	3760	2100	3240	3590	2850	2880	3990	1870	2140	1300
13	1920	1220	3300	2230	5170	3230	2910	2560	3930	1840	2260	1300
14	1740	1160	3010	2310	3200	2870	3150	2700	3800	1850	2200	1350
15	1540	1300	2870	2410	2610	2770	2830	2740	3620	1600	2210	1300
16	1400	1600	3610	2500	2340	2550	2970	2860	3630	1690	2090	1260
17	1350	4210	3440	5120	2290	2280	2650	2910	3560	3510	1990	1200
18	1280	4560	6580	15400	2620	2120	2410	2630	3930	3030	1990	1140
19	1200	2650	4370	13700	2370	2020	2250	2590	4020	2180	1730	1400
20	1150	2160	3460	7310	2170	1960	2070	2600	3720	1870	1670	2000
21	1120	1920	3070	5330	2760	2220	1960	3220	3180	1820	1760	2750
22	1080	1900	2770	4370	2900	2750	2110	4340	3260	1870	1600	1810
23	1000	1740	2740	3730	4030	3650	3420	3430	3210	1850	1540	1360
24	1100	1740	2800	3260	2980	3720	4930	3780	2950	1800	2460	2140
25	1600	4890	2520	2960	2590	3070	6770	3620	3150	2000	2930	1670
26	2740	3270	5900	2730	2440	2820	7340	3590	2980	2070	2530	1500
27	1760	2360	10900	2520	2390	3600	5940	3540	2670	2100	1920	1300
28	1640	2060	5890	2340	2630	3020	4780	2860	2460	2330	1600	1180
29	2160	1880	4370	2190	---	2570	4600	2600	2640	2300	3560	1230
30	1690	1770	3670	2080	---	2330	4250	2370	2420	1880	2270	1200
31	2520	---	3160	2010	---	2190	---	2960	---	1810	1710	---
TOTAL	51570	67090	117090	108090	70210	89930	104080	102310	127360	61640	64640	47060
MEAN	1664	2236	3777	3487	2508	2901	3469	3300	4245	1988	2085	1569
MAX	3120	5130	10900	15400	5170	5120	7340	5660	9510	3510	3560	2750
MIN	1000	1160	1350	1470	1560	1920	1900	2370	2420	1560	1540	1140
CFSM	2.12	2.85	4.81	4.44	3.19	3.69	4.41	4.20	5.40	2.53	2.65	2.00
IN.	2.44	3.18	5.54	5.12	3.32	4.26	4.93	4.84	6.03	2.92	3.06	2.23
AC-FT	102300	133100	232200	214400	139300	178400	206400	202900	252600	122300	128200	93380

CAL YR 1976 TOTAL 1405770 MEAN 3841 MAX 16600 MIN 1000 CFSM 4.89 IN 66.53 AC-FT 2788000
WTR YR 1977 TOTAL 1011090 MEAN 2770 MAX 15400 MIN 1000 CFSM 3.52 IN 47.85 AC-FT 2005000

12215100 SUMAS RIVER NEAR HUNTINGDON, BRITISH COLUMBIA

LOCATION.--Lat 49°00'09", long 122°13'50", on highway bridge at international boundary, 1.5 mi (2.4 km) east of Huntingdon.

DRAINAGE AREA.--57.6 mi² (149.2 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to December 1968, January 1970 to current year, in reports of Geological Survey. October 1935 to June 1949 (fragmentary gage heights only), October 1950 to September 1952 (gage heights only) and October 1952 to September 1960 in reports of Department of Northern Affairs and National Resources, Canada.

GAGE.--Water-stage recorder.

COOPERATION.--Records furnished by Department of the Environment, Canada.

AVERAGE DISCHARGE.--21 years (1953-68, 1971, 1974-77), 115 ft³/s (3.257 m³/s) 83,320 acre-ft/yr (103 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft³/s (46.7 m³/s) Dec. 3, 1975; maximum gage height, 13.50 ft (4.115 m) Feb. 11, 1951 (from high-water mark); minimum discharge, 1.1 ft³/s (0.031 m³/s) Aug. 28, 1958, gage height, 1.72 ft (0.524 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 801 ft³/s (22.7 m³/s) Jan. 19; gage height, 8.52 ft (2.597 m); minimum daily, 14 ft³/s (0.40 m³/s) Aug. 17, 18, 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	153	71	108	103	123	120	72	164	35	27	33
2	47	119	68	101	100	111	113	70	193	33	22	33
3	48	91	66	96	96	107	107	71	118	34	20	39
4	47	76	64	93	92	104	103	70	95	36	20	42
5	47	69	62	84	90	102	100	71	86	33	20	38
6	48	66	65	79	88	111	100	68	74	32	19	35
7	46	64	151	78	86	105	100	65	69	30	20	33
8	45	62	290	76	83	207	105	62	61	30	24	32
9	44	61	257	73	86	233	130	68	58	29	19	32
10	47	59	203	69	88	240	122	59	56	30	18	32
11	48	58	156	70	94	195	113	59	54	34	18	32
12	46	57	132	120	104	176	105	58	53	33	17	31
13	45	57	119	179	110	190	102	57	52	31	18	30
14	44	56	109	105	102	150	99	62	52	30	20	29
15	45	54	105	202	94	157	103	65	50	29	22	29
16	43	60	107	209	89	154	166	72	49	32	26	30
17	43	81	112	267	87	137	141	83	48	51	14	31
18	43	87	104	507	87	124	120	73	45	48	14	30
19	42	81	197	696	83	116	108	65	45	45	16	30
20	43	73	161	377	83	119	99	61	45	39	14	32
21	43	64	121	255	80	125	92	60	44	34	15	33
22	43	67	110	206	90	161	92	61	40	33	20	34
23	43	65	108	175	158	191	87	58	44	33	18	34
24	45	72	110	155	130	216	83	60	43	29	25	30
25	51	141	107	141	111	183	80	67	42	30	41	30
26	56	150	162	132	160	168	89	65	42	26	36	35
27	53	112	241	124	103	185	101	62	41	24	36	33
28	65	92	206	115	116	172	90	57	38	22	35	33
29	71	81	194	109	---	148	81	55	38	23	38	33
30	63	76	131	105	---	134	76	53	38	24	38	32
31	103	---	115	102	---	125	---	67	---	25	36	---
TOTAL	1538	2408	4222	5279	2730	4833	3116	1980	1883	996	727	987
MEAN	49.6	80.3	136	170	97.5	156	104	64.2	62.8	32.1	23.5	33.2
MAX	103	153	290	696	158	240	166	83	193	51	41	42
MIN	42	54	62	69	80	102	76	53	38	22	14	29
AC-FT	3050	4780	8370	10470	5420	9590	6180	3930	3730	1980	1440	1960

CAL YR 1976 TOTAL 47901 MEAN 131 MAX 1010 MIN 26 AC-FT 95190
WTR YR 1977 TOTAL 30720 MEAN 84.2 MAX 696 MIN 14 AC-FT 60940

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

12215100 SUMAS RIVER NEAR HUNTINGDON, BRITISH COLUMBIA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1974, October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
13...	0845	45	264	7.4	11.5	60	6	8.2	1.2	.16	.04	.02
27...	0840	53	285	7.0	8.7	65	4	8.4	1.3	.23	.09	.03
NOV												
10...	0455	50	257	7.2	6.9	55	5	8.7	1.3	.16	.08	.02
16...	0910	80	280	7.4	7.5	100	8	8.4	1.3	.26	.15	.04
DEC												
08...	0845	200	240	7.4	7.5	160	30	9.4	2.1	.62	.37	.13
22...	0855	120	290	7.5	5.0	65	15	12.8	2.0	.25	.09	.02
JAN												
13...	0815	174	270	7.4	2.0	85	20	11.0	1.8	.56	.14	.05
25...	0845	130	295	7.5	3.3	70	10	11.9	1.8	.26	.10	.02
FEB												
03...	0850	90	245	7.5	4.4	50	8	13.4	1.6	.21	.04	.02
23...	0920	174	276	7.3	5.0	95	30	10.0	1.5	.30	.14	.04
MAR												
15...	0845	170	228	7.6	5.8	65	15	10.5	1.6	.25	.10	.02
31...	1130	127	283	7.5	8.3	100	7	11.0	1.4	.16	.04	.03
APR												
13...	0930	90	250	7.6	9.8	70	8	9.3	1.2	.18	.12	.02
27...	1050	105	240	7.9	10.2	90	1	8.5	1.1	.20	.14	.05
MAY												
11...	1020	61	263	7.2	11.3	65	5	9.2	1.1	.16	.09	.03
25...	0910	71	260	7.6	11.0	50	6	9.3	1.0	.14	.08	.02
JUN												
15...	0850	51	271	7.7	14.2	75	7	8.0	1.1	.16	.11	.02
29...	0845	80	254	7.3	15.2	85	7	8.1	1.1	.15	.07	.02
JUL												
07...	1015	30	290	7.6	14.3	50	7	9.2	1.1	.18	.09	.03
20...	1010	39	282	7.7	15.5	50	6	8.3	1.2	.16	.10	.03
AUG												
03...	0850	20	285	7.3	14.2	75	75	8.2	1.1	.24	.12	.05
17...	1015	16	289	7.5	14.7	30	6	8.5	1.1	.36	.15	.08
SEP												
09...	1200	32	252	7.7	16.6	30	6	8.6	1.1	.18	.04	.04
21...	1045	33	265	7.6	12.5	--	6	8.0	1.2	.19	.04	.03

12215700 CHILLIWACK RIVER NEAR VEDDER CROSSING, BRITISH COLUMBIA

LOCATION.--Lat 49°05'02", long 121°27'24", at outlet of Chilliwack Lake 30 mi (48.3 km) upstream from Vedder Crossing.

DRAINAGE AREA.--131 mi² (339 km²).

PERIOD OF RECORD.--October 1960 to current year in reports of Geological Survey. May 1923 to June 1931 and May 1937 to September 1960 in reports of Department of Northern Affairs and National Resources, Canada. Prior to October 1969, published as 12214200.

GAGE.--Water-stage recorder.

COOPERATION.--Records furnished by Department of the Environment, Canada.

AVERAGE DISCHARGE.--45 years (water years 1924-47, 1949-50, 1959-77) 673 ft³/s (19.06 m³/s) 487,600 acre-ft/yr (601 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,100 ft³/s (116 m³/s) June 10, 1972, gage height, 9.34 ft (2.847 m); maximum gage height, 9.53 ft (2.905 m) June 20, 1974; minimum daily discharge, 104 ft³/s (2.95 m³/s) Oct. 21, 1923 and on many days during months of February and March 1929, December 1936 and February 1937.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,500 ft³/s (42.5 m³/s) June 9, gage height, 6.53 ft (1.990 m); minimum daily, 228 ft³/s (6.46 m³/s) Nov. 15, Apr. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	495	275	277	405	334	304	238	970	703	845	586	457
2	480	286	267	389	324	294	234	985	815	816	594	438
3	460	286	258	372	311	285	229	1080	838	775	580	437
4	445	284	250	354	298	275	228	979	842	737	606	443
5	428	261	241	337	288	267	232	930	932	697	609	451
6	415	275	236	320	276	262	247	869	1060	656	607	445
7	367	270	246	306	266	281	284	811	1290	613	598	428
8	384	265	256	293	258	307	353	771	1400	587	588	412
9	371	259	271	279	253	324	408	747	1480	566	578	393
10	377	253	271	268	259	327	431	753	1400	545	570	374
11	394	248	270	257	283	321	442	764	1350	530	564	358
12	387	243	265	254	310	317	443	745	1330	534	563	342
13	388	234	258	248	357	310	452	717	1320	533	566	329
14	378	229	253	244	373	301	450	693	1300	523	570	318
15	384	228	251	238	376	292	445	665	1270	513	567	309
16	348	237	267	235	373	283	438	647	1260	515	557	299
17	329	242	273	247	373	273	425	625	1220	562	543	289
18	312	349	303	429	377	265	417	604	1290	581	531	278
19	297	359	310	596	376	260	405	588	1280	574	520	274
20	285	357	310	620	363	253	391	585	1240	558	510	287
21	274	346	308	610	364	253	376	632	1230	545	501	304
22	263	335	302	585	362	249	368	630	1190	537	491	305
23	252	324	301	553	357	257	389	650	1160	531	483	302
24	251	325	296	521	347	262	473	670	1100	526	496	303
25	252	343	292	490	338	260	659	676	1080	527	507	298
26	250	337	330	464	329	262	882	670	1040	536	506	291
27	242	324	426	439	320	267	965	657	999	544	491	281
28	240	311	456	415	311	263	971	636	947	578	478	272
29	240	298	459	394	---	257	971	610	910	613	506	264
30	236	287	453	374	---	250	944	586	873	609	502	256
31	245	---	436	358	---	244	---	570	---	592	480	---
TOTAL	10499	8749	9384	11898	9156	8625	14211	22413	34226	18393	16844	10237
MEAN	339	291	303	384	327	278	474	723	1141	593	543	341
MAX	495	359	459	620	377	327	971	1080	1480	845	609	457
MIN	236	228	236	235	253	244	228	570	703	513	478	256
AC-FT	20820	17360	18610	23600	18160	17110	28190	44460	67890	36480	33410	20310

CAL YR 1976 TOTAL 284517 MEAN 777 MAX 2400 MIN 228 AC-FT 564300
WTR YR 1977 TOTAL 174612 MEAN 478 MAX 1480 MIN 228 AC-FT 346300

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

12215900 SLEESE CREEK NEAR VEDDER CROSSING, BRITISH COLUMBIA

LOCATION.--Lat 49°04'21", long 121°41'58", approximately 200 ft (61 m) upstream from unnamed creek, 0.8 mi (1.3 km) upstream from mouth and 13.5 mi (21.7 km) east of Vedder Crossing.

DRAINAGE AREA.--62.7 mi² (162.4 km²).

PERIOD OF RECORD.--October 1960 to November 1962, August 1963 to March 1964, and May 1964 to current year in reports of Geological Survey. March 1957 to September 1960 in reports of Department of Northern Affairs and National Resources, Canada. Prior to October 1969, published as 12214300.

GAGE.--Water-stage recorder. Prior to Aug. 1, 1963, at site 0.7 mi (1.1 km) downstream.

COOPERATION.--Records furnished by Department of the Environment, Canada.

AVERAGE DISCHARGE.--14 years (water years 1960-62, 1965-74, 1977) 354 ft³/s (10.03 m³/s) 256,500 acre-ft/yr (316 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,860 ft³/s (109 m³/s) Oct. 21, 1963, gage height, 7.81 ft (2.380 m); minimum, 19.8 ft³/s (0.56 m³/s) Oct. 5, 1960, gage height, 2.24 ft (0.683 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 1,300 ft³/s (36.8 m³/s) Jan. 18; minimum daily, 82 ft³/s (2.32 m³/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	193	196	140	194	150	138	105	545	748	351	285	143
2	192	151	134	180	145	129	102	588	572	313	290	173
3	169	145	128	166	140	125	107	543	468	268	285	178
4	149	136	120	143	136	118	137	432	577	244	296	192
5	154	130	113	131	131	112	191	355	678	223	290	177
6	151	120	119	130	127	113	255	302	962	207	269	155
7	151	122	193	121	127	160	406	301	1040	213	257	141
8	149	120	237	112	125	186	573	318	851	245	249	128
9	143	123	211	106	135	172	501	368	616	255	244	120
10	267	120	184	99	197	156	335	432	569	235	240	119
11	280	111	208	98	206	146	287	407	612	251	244	118
12	196	103	196	104	452	148	266	331	639	277	257	117
13	175	96	181	98	377	137	292	304	617	245	255	115
14	152	93	167	96	271	130	255	297	588	233	244	97
15	137	113	209	98	231	126	242	273	561	238	228	101
16	125	384	244	107	216	118	229	293	561	340	217	101
17	115	570	291	403	225	114	216	275	634	448	217	93
18	107	355	295	1300	217	111	188	281	691	315	209	82
19	101	257	238	625	201	107	175	300	642	287	202	91
20	97	207	215	434	202	105	172	310	534	273	208	137
21	90	191	196	346	223	109	172	441	463	264	200	238
22	86	173	182	292	207	117	225	425	492	262	178	198
23	84	171	181	257	191	158	408	453	445	257	201	209
24	88	235	164	232	173	138	746	411	435	257	235	220
25	96	287	180	212	162	127	903	364	451	262	215	173
26	88	198	602	195	153	127	806	399	402	266	192	148
27	85	174	508	183	148	132	585	342	350	289	161	131
28	100	164	353	173	146	121	526	304	351	356	245	113
29	93	153	291	165	---	116	525	282	349	374	245	93
30	87	145	247	161	---	112	511	262	332	318	177	89
31	170	---	219	157	---	109	---	437	---	294	156	---
TOTAL	4270	5543	6946	7118	5414	4017	10441	11375	17230	8660	7191	4190
MEAN	138	185	224	230	193	130	348	367	574	279	232	140
MAX	280	570	602	1300	452	186	903	588	1040	448	296	238
MIN	84	93	113	96	125	105	102	262	332	207	156	82
AC-FT	8470	10990	13780	14120	10740	7970	20710	22560	34180	17180	14260	8310

CAL YR 1976 TOTAL 139111 MEAN 380 MAX 1420 MIN 71 AC-FT 275900
WTR YR 1977 TOTAL 92395 MEAN 253 MAX 1300 MIN 82 AC-FT 183300

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

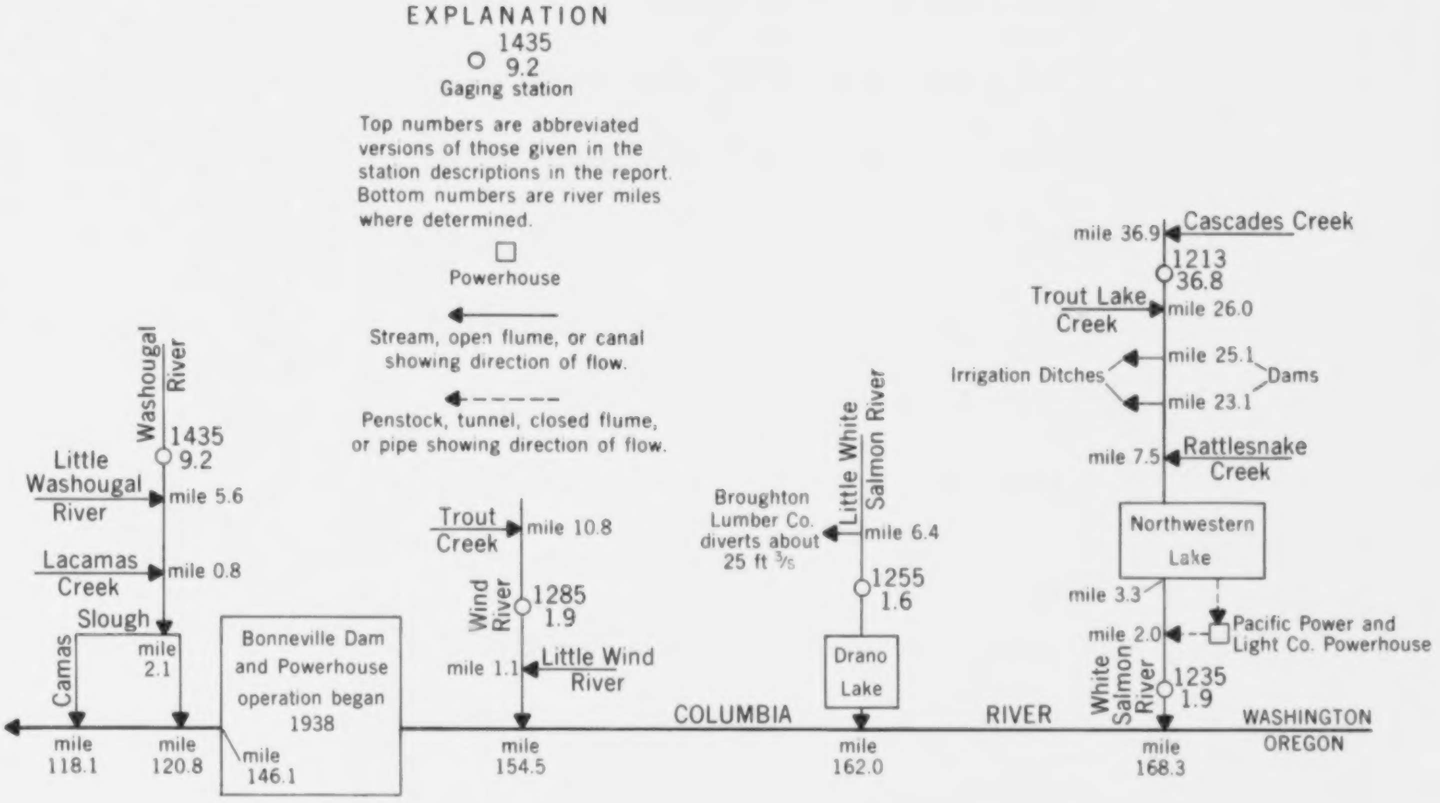
EXPLANATION
1435
9.2
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Washougal River
1435
9.2
Little Washougal River
mile 5.6
Lacamas Creek
mile 0.8
Slough
Camas
mile 2.1
mile 118.1
mile 120.8
Bonneville Dam and Powerhouse operation began 1938
mile 146.1
Trout Creek
mile 10.8
Wind River
1285
1.9
mile 1.1
Little Wind River
mile 154.5
COLUMBIA
RIVER
Broughton Lumber Co. diverts about 25 ft³/s
Little White Salmon River
mile 6.4
1255
1.6
Drano Lake
mile 162.0
mile 36.9
Cascades Creek
1213
36.8
Trout Lake Creek
mile 26.0
Irrigation Ditches
mile 25.1
mile 23.1
Dams
mile 7.5
Rattlesnake Creek
Northwestern Lake
mile 3.3
mile 2.0
Pacific Power and Light Co. Powerhouse
White Salmon River
1235
1.9
mile 168.3
WASHINGTON
OREGON

Figure 19. Gaging stations in lower Columbia River basin between White Salmon and Washougal Rivers.

14121300 WHITE SALMON RIVER BELOW CASCADE CREEK, NEAR TROUT LAKE, WA

LOCATION.--Lat 46°06'14", long 121°36'27", in SW¼SW¼ sec.7, T.7 N., R.10 E., Skamania County, Hydrologic Unit 17070105, Gifford Pinchot National Forest, on right bank 100 ft (30 m) downstream from Cascade Creek, 7.9 mi (12.7 km) northwest of Trout Lake, and at mile 36.8 (59.2 km).

DRAINAGE AREA.--32.4 mi^2 (83.9 km^2).

PERIOD OF RECORD.--July 1957 to current year.

REVISED RECORDS.--WSP 1638: Drainage area. WRD Wash. 1971: 1958-61(P), 1963(P), 1965(P), 1966(M), 1967-69(P), 1970(M).

GAGE.--Water-stage recorder. Altitude of gage is 3,080 ft (939 m), from topographic map.

REMARKS.--Records good except those during period of no gage-height record June 3 to Aug. 1, which are fair. Probably some small diversions above station for irrigation. No regulation.

AVERAGE DISCHARGE.--20 years, 152 ft^3/s (4.305 m^3/s), 63.71 in/yr (1,620 mm/yr), 110,100 acre-ft/yr (136 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,270 ft^3/s (36.0 m^3/s) Dec. 4, 1975, gage height, 4.24 ft (1.292 m), from rating curve extended above 600 ft^3/s (17.0 m^3/s); minimum, 48 ft^3/s (1.36 m^3/s) Mar. 24, 1964, gage height, 1.15 ft (0.351 m), probably result of pondage upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 360 ft^3/s (10.2 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Sept. 4	1600	*356	10.1	*2.57	0.783

Minimum daily discharge, 60 ft^3/s (1.70 m^3/s) Jan. 7, 10, Feb. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	109	74	64	62	73	66	163	139	90	90	70
2	106	96	73	66	62	67	65	207	180	75	93	68
3	95	93	73	66	62	66	73	216	140	65	102	78
4	93	90	72	65	62	64	88	172	170	65	96	212
5	95	89	72	63	62	65	100	154	180	70	92	110
6	95	88	73	61	62	66	114	141	170	80	90	82
7	99	86	77	60	62	71	141	138	180	84	82	75
8	100	86	82	62	60	72	150	137	160	82	89	70
9	97	85	76	61	61	67	123	131	130	80	95	70
10	95	84	74	60	89	64	108	152	120	78	91	70
11	95	84	74	63	77	64	109	137	120	78	92	70
12	93	83	73	65	99	64	112	126	130	78	96	68
13	93	82	72	64	83	63	117	122	120	80	95	65
14	91	84	71	63	71	63	106	122	115	82	89	63
15	89	96	75	69	69	63	109	117	110	84	90	62
16	86	109	73	70	69	62	109	112	105	82	91	63
17	84	106	73	75	71	61	98	126	100	80	93	62
18	84	95	73	98	69	62	96	131	115	78	89	69
19	86	88	69	79	68	62	95	118	110	80	90	79
20	86	85	68	70	72	61	96	120	100	82	91	85
21	82	83	68	68	71	62	99	130	105	86	96	95
22	81	82	67	66	68	64	114	120	100	90	78	77
23	81	81	68	66	65	64	138	137	95	90	71	93
24	88	81	66	65	64	63	168	123	95	90	72	98
25	130	82	71	64	64	62	185	120	92	90	78	109
26	99	75	92	63	64	65	183	136	92	90	83	95
27	91	71	85	64	71	77	166	122	92	88	67	92
28	89	75	74	62	88	66	164	123	95	86	85	101
29	86	77	71	62	---	64	171	117	100	82	89	92
30	84	75	68	65	---	64	169	115	105	85	125	80
31	114	---	66	62	---	65	---	157	---	87	76	---
TOTAL	2893	2600	2263	2051	1947	2016	3632	4242	3665	2537	2756	2523
MEAN	93.3	86.7	73.0	66.2	69.5	65.0	121	137	122	81.8	88.9	84.1
MAX	130	109	92	98	99	77	185	216	180	90	125	212
MIN	81	71	66	60	60	61	65	112	92	65	67	62
AC-FT	5740	5160	4490	4070	3860	4000	7200	8410	7270	5030	5470	5000

CAL YR 1976 TOTAL 55614 MEAN 152 MAX 495 MIN 66 AC-FT 110300
WTR YR 1977 TOTAL 33125 MEAN 90.8 MAX 216 MIN 60 AC-FT 65700

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW¼NW¼ sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft (91 m) downstream from bridge, 1,000 ft (305 m) downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi (2.7 km) north of Underwood, and at mile 1.9 (3.1 km).

DRAINAGE AREA.--386 mi² (1,000 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1912 to February 1913 (published as "at Condit Dam, near Underwood") March 1915 to September 1930, September 1935 to current year.

REVISED RECORDS.--WSP 484: 1915-17. WSP 1348: 1936-41(m). WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 112.96 ft (34.340 m) above mean sea level. Prior to March 1913, reference point at dam 1 mi (1.6 km) upstream at different datum. March 1915, to July 16, 1918, water-stage recorder at site 200 ft (61 m) upstream at datum 3.24 ft (0.988 m) higher, and July 17, 1918, to Sept. 30, 1930, at datum 2.24 ft (0.683 m) higher than present datum.

REMARKS.--Water-discharge records excellent. Diversions for irrigation of about 4,500 acres (18 km²) in Trout Lake area. Low and medium flows regulated by powerplant of Pacific Power & Light Co.

AVERAGE DISCHARGE.--57 years (water years 1916-30, 1936-77), 1,133 ft³/s (32.09 m³/s), 820,900 acre-ft/yr (1,010 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 15,300 ft³/s (433 m³/s) Jan. 15, 1974, gage height, 12.85 ft (3.917 m), from rating curve extended above 6,000 ft³/s (170 m³/s); practically no flow at times when powerplant is shut down; minimum daily, 158 ft³/s (4.47 m³/s) Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,500 ft³/s (42.5 m³/s) May 4, gage height, 4.67 ft (1.425 m); minimum, 24 ft³/s (0.68 m³/s) May 10, gage height, 0.86 ft (0.262 m); minimum daily, 361 ft³/s (10.2 m³/s) Jan. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	577	655	554	523	485	625	527	702	753	477	429	509
2	616	650	545	514	481	554	545	713	660	477	429	490
3	620	620	541	514	481	596	541	874	650	481	428	485
4	625	606	550	510	481	527	550	1010	747	472	429	542
5	640	601	541	592	481	527	606	795	868	460	427	623
6	620	587	541	361	468	510	620	724	849	460	438	549
7	635	592	541	485	464	601	713	685	825	460	432	506
8	645	582	550	477	464	759	819	670	849	464	414	506
9	635	592	554	481	464	691	759	868	747	477	422	471
10	635	582	550	472	493	675	696	497	655	460	426	475
11	620	577	550	472	541	606	650	675	640	464	420	476
12	620	577	532	493	554	587	655	665	645	477	422	454
13	620	568	532	506	559	564	696	620	640	464	422	459
14	601	545	527	497	559	554	665	577	601	460	422	457
15	606	635	523	502	527	541	645	640	596	460	422	441
16	606	645	541	536	493	527	620	635	601	456	405	441
17	616	587	532	523	502	523	606	611	587	460	404	397
18	611	635	536	550	510	519	620	596	577	460	418	453
19	616	640	532	625	506	502	573	587	601	456	418	464
20	635	601	523	564	502	502	568	545	606	452	418	484
21	592	592	523	541	532	502	564	582	573	452	418	516
22	550	582	514	523	568	497	568	601	592	452	418	544
23	596	582	523	506	523	497	606	606	554	452	418	517
24	611	582	519	502	510	510	665	616	523	452	415	531
25	650	568	510	493	502	519	783	587	519	448	445	546
26	645	573	564	481	502	514	777	601	519	414	448	574
27	645	550	611	468	502	550	753	660	519	429	419	535
28	616	532	596	489	601	577	702	645	489	448	432	505
29	601	559	564	489	---	564	707	616	514	441	506	506
30	601	568	545	485	---	541	724	606	506	429	496	504
31	630	---	527	477	---	527	---	620	---	429	525	---
TOTAL	19136	17765	16791	15651	14255	17288	19523	20429	19005	14143	13385	14960
MEAN	617	592	542	505	509	558	651	659	634	456	432	499
MAX	650	655	611	625	601	759	819	1010	868	481	525	623
MIN	550	532	510	361	464	497	527	497	489	414	404	397
AC-FT	37960	35240	33300	31040	28270	34290	38720	40520	37700	28050	26550	29670

CAL YR 1976 TOTAL 417900 MEAN 1142 MAX 3420 MIN 510 AC-FT 828900
WTR YR 1977 TOTAL 202331 MEAN 554 MAX 1010 MIN 361 AC-FT 401300

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-70, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1968 to August 1970.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT									
05...	1320	862	74	7.7	8.7	--	3	10.9	.06
19...	1325	596	80	7.6	7.2	8	5	11.6	.04
NOV									
03...	1305	625	71	7.5	8.3	20	6	11.4	.05
17...	1230	665	73	7.5	7.9	8	3	11.5	.05
DEC									
08...	1345	541	76	7.6	6.0	8	1	12.2	.07
15...	1205	519	62	7.5	5.7	8	2	12.1	.07
JAN									
19...	1235	616	77	7.5	5.7	13	2	11.9	.07
FEB									
09...	1330	464	75	7.8	5.3	4	1	11.4	.05
16...	1205	493	70	7.6	6.3	30	2	11.8	.11
MAR									
09...	1330	601	72	7.3	6.4	20	4	11.6	.11
23...	1150	502	75	7.6	7.8	8	3	11.7	.11
APR									
06...	1230	616	72	7.6	9.4	8	1	10.9	.04
20...	1220	568	70	7.7	8.4	17	1	11.5	.06

DATE	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT								
05...	.02	.03	.02	0	4	8	.0	10
19...	.02	.04	.02	0	1	[illegible]	.0	0
NOV								
03...	.03	.04	.02	0	0	[illegible]	.0	0
17...	.02	.03	.02	0	1	6	.0	0
DEC								
08...	.02	.06	.02	0	5	16	.1	10
15...	.02	.03	.03	0	0	3	.0	0
JAN								
19...	.04	.04	.03	0	1	8	.0	0
FEB								
09...	.02	.04	.02	0	1	5	.0	0
16...	.02	.03	.03	0	1	16	.0	0
MAR								
09...	.04	.05	.02	0	0	3	.1	0
23...	.06	.03	.03	0	2	9	.0	10
APR								
06...	.02	.03	.02	0	0	6	.0	10
20...	.02	.03	.03	0	0	13	.0	0

14125500 LITTLE WHITE SALMON RIVER NEAR COOK, WA

LOCATION.--Lat 45°43'25", long 121°37'58", in NE¼NE¼ sec.26, T.3 N., R.9 E., Skamania County, Hydrologic Unit 17070105, on left bank 1.5 mi (2.4 km) northeast of Cook, and at mile 1.6 (2.6 km).

DRAINAGE AREA.--134 mi² (347 km²).

PERIOD OF RECORD.--September 1956 to September 1977 (discontinued). Records for October to November 1909, published as "near Cooks" in WSP 253, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1568: Drainage area. WSP 1738: 1957(M). WRD Wash. 1972: 1965(M), 1968(M), 1970(M).

GAGE.--Water-stage recorder. Datum of gage is 135.6 ft (41.33 m) above mean sea level (unadjusted).

REMARKS.--Records good. Broughton Lumber Co. diversion above station carries about 25 ft³/s (0.71 m³/s) out of basin into Columbia River. Other diversions above station for water supply, irrigation, and hatchery purposes. Slight regulation.

AVERAGE DISCHARGE.--21 years, 547 ft³/s (15.49 m³/s), 396,300 acre-ft/yr (489 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,250 ft³/s (262 m³/s) Jan. 21, 1972, gage height, 9.92 ft (3.024 m), from rating curve extended above 2,700 ft³/s (76.5 m³/s) on basis of slope-area measurement of peak flow; minimum, 96 ft³ (2.72 m³/s) Oct. 19, 1970; minimum gage height, 0.58 ft (0.177 m) Oct. 29, 1958, Oct. 11, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s (45.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0315	*654	18.5	*3.36	1.024

Minimum daily discharge, 105 ft³/s (2.97 m³/s) Jan. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	138	116	121	116	343	332	260	292	249	168	135
2	140	132	115	116	116	295	330	260	288	247	167	130
3	138	129	116	114	115	285	322	285	288	244	163	131
4	136	126	116	114	115	266	322	312	335	242	161	138
5	138	125	115	112	118	257	330	307	327	253	159	142
6	140	125	114	110	115	247	340	295	317	260	160	135
7	145	123	115	108	114	369	343	288	307	255	154	132
8	148	123	119	106	114	610	343	283	300	251	152	129
9	145	123	119	105	108	614	327	278	295	242	150	127
10	140	123	116	105	122	515	312	280	290	224	148	124
11	138	122	116	108	125	443	300	278	288	222	145	118
12	136	122	115	110	125	419	300	278	288	220	143	117
13	135	121	114	115	125	389	292	278	285	216	142	117
14	134	122	114	121	125	375	290	283	283	214	141	116
15	134	125	112	126	122	366	288	283	280	212	140	115
16	130	132	112	129	121	356	285	283	278	212	138	115
17	128	130	112	128	119	343	280	283	276	208	136	115
18	130	130	114	133	118	337	280	283	273	204	135	117
19	130	126	112	136	121	332	278	280	271	203	134	120
20	127	125	112	135	122	322	278	283	271	199	133	125
21	125	123	111	132	126	314	278	290	271	197	132	132
22	125	122	111	129	154	309	278	290	269	193	131	127
23	125	121	112	126	155	314	276	292	266	191	130	129
24	128	121	111	125	150	319	276	290	260	188	131	143
25	145	122	112	122	150	304	276	288	269	186	136	150
26	133	123	132	121	163	302	276	290	257	184	149	156
27	130	121	158	121	172	375	271	297	257	181	136	147
28	129	118	142	119	297	375	266	304	253	179	137	141
29	128	116	135	118	---	356	264	295	251	177	137	140
30	128	116	129	116	---	343	262	292	251	174	155	136
31	132	---	125	116	---	335	---	295	---	172	142	---
TOTAL	4160	3725	3672	3697	3743	11129	8895	8883	8436	6599	4405	3899
MEAN	134	124	118	119	134	359	297	287	281	213	145	130
MAX	148	138	158	136	297	614	343	312	335	260	168	156
MIN	125	116	111	105	108	247	262	260	251	172	130	115
AC-FT	8250	7390	7280	7330	7420	22070	17640	17620	16730	13090	8900	7730

CAL YR 1976 TOTAL 181720 MEAN 497 MAX 2700 MIN 111 AC-FT 360400
WTR YR 1977 TOTAL 71323 MEAN 195 MAX 614 MIN 105 AC-FT 141500

14128500 WIND RIVER NEAR CARSON, WA

LOCATION.--Lat 45°44'10", long 121°48'12", in SW¼NE¼ sec.21, T.3 N., R.8 E., Skamania County, Hydrologic Unit 17070105, on right bank 0.8 mi (1.3 km) upstream from Little Wind River, 1.0 mi (1.6 km) northeast of Carson, and 1.9 mi (3.1 km) upstream from mouth. Records include flow of Little Wind River.

DRAINAGE AREA.--225 mi² (583 km²), includes that of Little Wind River.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1934 to September 1977 (discontinued). Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 964: Drainage area. WSP 1348: 1935-37, 1938(M), 1942-43(M), 1945-46(M).

GAGE.--Water-stage recorder. Datum of gage is 112.6 ft (34.32 m) above mean sea level (from river-profile survey).

REMARKS.--Water-discharge records good. Low flow occasionally affected by pondage at Forest Service powerplant on Trout Creek. No diversion above station.

AVERAGE DISCHARGE.--43 years, 1,199 ft³/s (33.96 m³/s), 72.37 in/yr (1,838 mm/yr), 868,700 acre-ft/yr (1,070 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,700 ft³/s (1,290 m³/s) Jan. 15, 1974, gage height, 21.91 ft (6.678 m), from rating extended above 14,000 ft³/s (396 m³/s) on the basis of slope-area measurement of peak flow; minimum, 123 ft³/s (3.48 m³/s) Nov. 30, 1952; minimum gage height, 1.72 ft (0.524 m) Aug. 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,500 ft³/s (184 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	2300	*4,140	117	*9.66	2.944

MInimum discharge, 148 ft³/s (4.19 m³/s) Aug. 23, gage height, 1.72 ft (0.524 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	185	345	196	343	277	1940	1130	633	827	302	188	240
2	184	275	193	333	269	1440	1070	676	760	296	180	216
3	186	240	192	311	254	1290	1000	952	723	296	175	225
4	185	222	191	300	245	1090	1000	1090	1390	295	174	448
5	180	214	189	279	242	943	1120	1040	1410	289	173	512
6	179	207	188	253	236	910	1290	921	1190	283	176	354
7	178	201	188	246	232	2230	1430	861	1020	276	172	299
8	177	197	208	234	227	3360	1520	913	895	270	170	268
9	176	194	289	223	225	3060	1340	846	788	264	167	248
10	178	191	261	233	275	2180	1140	817	698	261	166	234
11	178	188	246	236	330	1660	1010	795	641	257	162	223
12	177	185	236	245	329	1490	931	721	610	252	161	214
13	175	182	228	293	383	1280	926	674	564	250	160	208
14	173	185	222	291	364	1140	871	652	540	245	158	202
15	172	205	219	316	342	1020	833	666	510	241	157	198
16	169	273	219	376	328	935	819	614	483	235	156	194
17	167	296	216	383	320	849	763	636	460	233	153	193
18	166	323	219	401	310	812	714	617	439	241	152	201
19	166	284	216	444	300	891	671	575	423	231	151	225
20	165	259	211	416	307	850	641	566	409	224	152	268
21	165	243	207	389	382	817	625	564	400	218	151	370
22	166	233	204	366	505	827	618	548	389	215	151	331
23	165	224	209	345	590	907	645	549	374	210	151	339
24	176	219	207	327	528	939	708	531	360	208	163	567
25	239	229	212	313	515	886	797	501	350	205	180	691
26	251	223	487	300	570	867	796	555	341	204	250	653
27	208	214	861	291	771	1560	728	594	332	201	208	517
28	196	206	583	284	2170	1420	687	693	322	196	194	463
29	190	203	471	275	---	1240	672	697	316	196	230	465
30	185	200	411	263	---	1100	656	652	310	193	423	453
31	214	---	370	266	---	1050	---	785	---	191	302	---
TOTAL	5671	6860	8549	9575	11906	40983	27151	21934	18274	7478	5706	10019
MEAN	183	229	276	309	425	1322	905	708	609	241	184	334
MAX	251	345	861	444	2170	3360	1520	1090	1410	302	423	691
MIN	165	182	188	223	225	812	618	501	310	191	151	193
AC-FT	11250	13610	16960	18990	23620	81290	53850	43510	36250	14830	11320	19870

CAL YR 1976 TOTAL 331541 MEAN 906 MAX 7910 MIN 165 AC-FT 657600
WTR YR 1977 TOTAL 174106 MEAN 477 MAX 3360 MIN 151 AC-FT 345300

14128500 WIND RIVER NEAR CARSON, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken at footbridge 200 ft (61 m) downstream from Little Wind River, 0.8 mi (1.3 km) downstream from gaging station and 1.2 mi (1.9 km) east of Carson.

PERIOD OF RECORD.--Water years 1975, 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data for the bimonthly water-quality samples listed below furnished by Washington State Department of Ecology. Coliform analyses for the diel study were performed by the Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
05...	1245	181	68	7.9	11.3	--	2	11.3	.00	.02	.03	.01
19...	1240	167	70	7.7	8.2	8	2	12.1	.00	.02	.14	.02
NOV												
03...	1230	239	64	7.7	10.1	13	6	11.7	.01	.04	.04	.02
17...	1145	265	63	7.5	9.5	21	5	11.4	.00	.02	.03	.01
DEC												
08...	1255	207	69	7.4	6.6	21	2	12.4	.02	.02	.03	.01
15...	1120	220	68	7.6	6.1	13	2	12.7	.01	.04	.03	.02
JAN												
05...	1200	282	70	7.6	1.1	7	2	14.5	.07	.04	.03	.01
19...	1135	265	58	7.3	4.7	29	4	12.6	.11	.03	.04	.02
FEB												
09...	1230	225	61	8.0	3.6	17	1	13.2	.03	.03	.03	.01
16...	1130	328	56	7.6	6.3	21	2	12.9	.10	.04	.03	.03
MAR												
09...	1245	3020	45	7.2	5.6	4	10	12.4	.06	.04	.06	.02
23...	1115	888	49	7.3	6.0	13	3	12.8	.02	.07	.03	.01
APR												
06...	1140	1200	53	7.4	10.2	17	3	10.0	.01	.03	.04	.03
20...	1145	629	54	7.7	9.0	13	2	11.9	.01	.03	.03	.02
MAY												
04...	1100	1060	45	7.4	8.5	29	6	11.8	.03	.05	.05	.04
18...	1130	650	50	7.4	9.0	17	1	11.0	.01	.02	.03	.00
JUN												
08...	1155	890	52	7.7	13.0	13	3	11.0	.01	.06	.04	.01
22...	1200	392	60	7.6	15.0	21	2	10.2	.01	.02	.04	.02
JUL												
13...	1215	253	63	7.8	15.6	4	2	10.7	.02	.03	.04	.01
27...	1315	202	75	8.1	18.9	13	1	10.3	.08	.05	.03	.01
AUG												
10...	1205	166	71	7.5	18.0	29	4	10.1	--	--	--	--
16...	1115	155	65	7.4	17.9	--	0	10.4	.03	.04	.04	.02
24...	1205	156	72	7.4	16.0	30	2	10.5	.01	.02	.04	.02
SEP												
14...	1215	201	68	7.6	15.3	21	1	10.5	.00	.03	.03	.02
28...	1155	666	68	7.3	12.0	8	3	11.1	.04	.05	.04	.01

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG											
16...	1115	155	65	7.4	17.9	0	10.4	110	<100	82	21
16...	1445	155	62	7.6	18.8	--	10.1	108	--	--	--
16...	1810	157	72	7.4	18.8	0	9.6	103	B200	84	--
16...	2215	155	69	7.2	18.0	0	9.2	99	B200	B20	--
17...	0040	156	68	7.0	18.6	--	9.1	97	--	--	--
17...	0300	152	68	7.3	18.0	--	9.4	100	--	--	--
17...	0525	151	65	7.2	16.4	0	9.7	99	B140	82	--
17...	1000	153	66	7.4	16.8	--	10.2	105	--	--	--

DATE	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG										
16...	0	5.8	1.7	5.5	.7	33	0	27	2.1	.6
16...	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	36	0	26	2.2	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
AUG										
16...	4.5	.0	19	56	0	.03	.04	.21	.06	.02
16...	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	0	.01	.02	.11	.03	.02

B Results based upon colony counts outside the ideal range.

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NW¼SE¼ sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank, 0.1 mi (0.2 km) downstream from Tumalt Creek, 1.0 mi (1.6 km) west of Warrendale, 5.1 mi (8.2 km) downstream from Bonneville Dam, and at mile 141.0 (226.9 km).

DRAINAGE AREA.--240,400 mi² (622,600 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to September 1977.
WATER TEMPERATURES: August 1967 to April 1973, October 1975 to September 1977.

INSTRUMENTATION: Water-quality monitor since October 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum 242 micromhos May 15, 1977; minimum, 107 micromhos June 5, 1976.
WATER TEMPERATURES: Maximum, 22.5°C Aug. 11-13, 1971, Aug. 17, 18, 1977; minimum, 1.0°C Feb. 3-11, 1972.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 242 micromhos May 15; minimum, 137 micromhos July 6.
WATER TEMPERATURES: Maximum, 22.5 °C Aug. 17, 18; minimum recorded, 5.0°C Feb. 24-27.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	* TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	FECAL COLI-FORM, .7UM-MF (COL./100 ML)	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)
OCT												
04...	1400	161500	161	8.0	16.3	3	9.3	94	B1	63	1	18
22...	1200	154900	191	7.9	15.0	3	9.9	B3	B11	68	8	19
DEC												
03...	1130	148700	186	7.7	6.0	4	12.1	94	<1	77	5	21
27...	1200	136700	195	8.3	5.9	2	11.9	B3	57	87	14	22
JAN												
24...	1400	180300	191	8.1	2.3	2	13.2	B3	B3	87	14	22
FEB												
28...	1300	132000	190	8.3	5.0	2	13.0	B2	21	80	8	22
MAR												
21...	1130	125600	188	8.2	5.8	3	12.9	<1	95	79	7	22
APR												
28...	1200	126900	207	8.0	12.2	3	11.4	B4	44	85	10	24
MAY												
31...	1130	141700	164	8.5	13.9	4	11.1	<1	<1	73	10	21
JUL												
07...	0930	85300	139	8.2	18.0	3	9.4	B1	94	61	10	17
25...	1400	96700	148	8.3	20.1	2	8.9	--	--	62	9	18
SEP												
02...	1100	83000	160	--	20.5	3	--	B2	49	60	1	19

* Temperatures taken at water surface.
B Results based upon colony counts outside the ideal range.

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)
OCT												
04...	4.3	6.1	.3	75	0	62	10	2.7	.2	6.2	83	86
22...	5.0	6.7	.4	73	0	60	12	3.0	.2	7.1	84	90
DEC												
03...	5.9	8.1	.4	88	0	72	15	3.3	.2	8.2	110	107
27...	7.7	9.0	.4	88	0	72	18	4.6	.2	9.1	118	115
JAN												
24...	7.8	8.0	.4	89	0	73	20	3.9	.2	8.8	115	116
FEB												
28...	6.2	7.7	.4	88	0	72	18	4.2	.2	8.5	110	111
MAR												
21...	5.9	6.6	.3	88	0	72	20	4.0	.2	7.5	117	111
APR												
28...	6.1	7.8	.4	91	0	75	16	4.3	.2	6.3	131	111
MAY												
31...	5.0	5.5	.3	77	0	63	15	3.1	.3	3.6	99	93
JUL												
07...	4.6	4.5	.2	63	0	52	12	2.6	.1	4.2	81	77
25...	4.1	4.8	.3	65	0	53	11	2.5	.2	3.7	81	77
SEP												
02...	3.0	4.4	.2	72	--	59	9.6	2.2	.2	6.9	76	82

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED SOLIDS (TONS PER DAY)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT											
04...	36200	.11	0	.10	.23	.33	.02	1.4	6	2620	89
22...	35100	.11	0	.11	.17	.28	.02	1.2	4	1670	92
DEC											
03...	44200	.15	18	.25	.21	.46	.04	--	8	3210	78
27...	43600	.16	2	.29	.39	.68	.03	--	3	1110	62
JAN											
24...	56000	.16	7	.32	.10	.42	.04	1.3	9	4380	--
FEB											
28...	39200	.15	0	.23	.97	1.2	.01	--	9	3210	89
MAR											
21...	39700	.16	2	.10	.27	.37	.03	--	5	1700	78
APR											
28...	44900	.18	15	.08	.35	.43	.03	2.2	10	3430	71
MAY											
31...	37000	.13	13	.02	.17	.19	.01	--	10	3830	60
JUL											
07...	18700	.11	3	.03	.28	.31	.04	--	8	1040	67
25...	21100	.11	10	.00	.34	.34	.01	1.6	9	2350	50
SEP											
02...	17000	.10	6	.11	.23	.34	.03	--	9	2020	--

DATE	TIME	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT												
22...	1200	3	1	<10	0	20	0	<50	0	10	9	190
JAN												
24...	1400	1	1	<10	1	0	0	<50	0	10	6	370
APR												
28...	1200	2	1	<10	1	0	0	<50	0	20	6	200
JUL												
25...	1400	1	1	<10	3	0	0	<50	0	20	4	190

DATE	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT											
22...	0	<100	0	10	10	.0	.0	--	0	30	10
JAN											
24...	20	<100	4	10	0	.0	.0	0	0	30	20
APR											
28...	10	<100	0	20	0	.0	.0	1	1	20	10
JUL											
25...	20	<100	24	20	0	.1	.1	0	0	10	0

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO JULY 1977

DATE	OCT 4,76	OCT 22,76	DEC 3,76	DEC 27,76	JAN 14,77
TIME	1400	1200	1130	1200	1400
TOTAL CELLS/ML	5500	4200	790	1700	2100
DIVERSITY: DIVISION	1.5	1.4	1.3	0.4	0.7
.CLASS	1.6	1.4	1.3	0.4	0.7
..ORDER	2.0	1.8	1.9	1.2	1.6
...FAMILY	2.7	2.0	2.1	1.4	2.1
....GENUS	3.2	2.6	2.9	2.3	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	*	0	--	-	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	790	14	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	*	0
....MICRACTINIUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	100	2	42	5	45	3	310	14
....CHODATELLA	--	-	--	-	--	-	--	-	36	2
....DICTYOSPHAERIUM	--	-	--	-	45	6	*	0	--	-
....OOCYSTIS	170	3	--	-	11	1	--	-	--	-
....TETRAEDRON	330	6	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	140	3	--	-	36	2	*	0
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	170	3	310	7	6	1	--	-	--	-
....TETRASTRUM	--	-	--	-	11	1	36	2	*	0
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	24	1
...PALMELLACEAE										
....GLOEOCYSTIS	--	-	--	-	22	3	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	12	1
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	460	8	440	10	160#	20	140	9	570#	27
....MELOSIRA	420	8	1100#	27	220#	28	420#	25	360#	17
....STEPHANODISCUS	--	-	*	0	*	0	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	*	0
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	*	0	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	*	0
....EPITHEMIA	--	-	*	0	*	0	--	-	*	0
...DIATOMACEAE										
....DIATOMA	--	-	*	0	--	-	--	-	140	7
...FRAGILARIACEAE										
....ASTERIONELLA	960#	17	190	4	*	0	690#	41	570#	27
....FRAGILARIA	750	14	150	4	84	11	260#	15	24	1
....SYNEDRA	--	-	51	1	28	4	31	2	*	0
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	*	0	*	0	--	-	*	0
...NAVICULACEAE										
....DIPLONEIS	--	-	--	-	*	0	--	-	--	-
....NAVICULA	--	-	--	-	*	0	--	-	12	1
...NITZSCHIACEAE										
....NITZSCHIA	83	2	34	1	8	1	*	0	72	3
...SURIRELLACEAE										
....CYMATOPLEURA	--	-	--	-	*	0	--	-	--	-
...TABELLARIACEAE										
....TABELLARIA	--	-	--	-	*	0	*	0	*	0
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....OCHROMONAS	42	1	--	-	--	-	--	-	--	-
.XANTHOPHYCEAE										
..HETEROTRICHALES										
...TRIBONEMATACEAE										
....TRIBONEMA	--	-	--	-	--	-	--	-	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

SAMPLING METHOD: EDI

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO JULY 1977

DATE TIME	OCT 4,76 1400		OCT 22,76 1200		DEC 3,76 1130		DEC 27,76 1200		JAN 14,77 1400	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	500	9	60	2	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	*	0
....OSCILLATORIA	830#	15	1600#	30	--	-	--	-	*	0
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....GOMPHOSPHAERIA	--	-	--	-	1400#	18	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	12	1
...PERIDINIACEAE										
....PERIDINIUM	--	-	*	0	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%
SAMPLING METHOD: EDI

DATE TIME	FEB 28,77 1300	MAY 31,77 1130	JUL 7,77 0930	JUL 25,77 1400
TOTAL CELLS/ML	5500	3600	6000	5200
DIVERSITY: DIVISION	0.1	0.0	0.1	1.1
.CLASS	0.1	0.0	0.1	1.1
..ORDER	1.0	0.5	0.9	1.6
...FAMILY	1.4	0.5	1.0	1.7
....GENUS	2.1	0.6	1.3	2.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	--	-	--	-	200	4
...MICRACTINIACEAE								
....GOLENKINIA	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	*	0	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	32	1	*	0	96	2	50	1
....CHODATELLA	--	-	*	0	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	50	1
....SCENEDESMUS	--	-	--	-	--	-	120	2
....TETRASTRUM	--	-	--	-	--	-	--	-
..TETRASPORALES								
...COCCOMYXACEAE								
....ELAKATOTHRIX	--	-	--	-	--	-	--	-
...PALMELLACEAE								
....GLOEOCYSTIS	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	3400#	62	*	0	150	2	110	2
....MELOSIRA	760	14	3100#	90	4200#	70	3300#	63
....STEPHANODISCUS	--	-	--	-	60	1	*	0
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	--	-	--	-
....COCCONEIS	32	1	--	-	--	-	37	1
....RHOICOSPHENIA	--	-	--	-	--	-	--	-

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO JULY 1977

DATE TIME	FEB 28,77 1300		MAY 31,77 1130		JUL 7,77 0930		JUL 25,77 1400	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	--	-	--	-
....EPITHEMIA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	160	3	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	15000#	20	180	5	60	1	--	-
....FRAGILARIA	580	11	94	3	13000#	22	67	2
....SYNEDRA	--	-	36	1	--	-	75	1
...GOMPHONEMATACEAE								
....GOMPHONEMA	32	1	--	-	--	-	--	-
...NAVICULACEAE								
....DIPLONEIS	--	-	--	-	--	-	--	-
....NAVICULA	32	1	--	-	--	-	--	-
...NITZSCHIACEAE								
....NITZSCHIA	32	1	--	-	56	1	*	0
...SURIRELLACEAE								
....CYMATOPLEURA	--	-	--	-	--	-	--	-
...TABELLARIACEAE								
....TABELLARIA	--	-	--	-	--	-	--	-
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....OCHROMONAS	--	-	--	-	--	-	--	-
.XANTHOPHYCEAE								
..HETEROTRICHALES								
...TRIBONEMATACEAE								
....TRIBONEMA	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	660	13
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....GOMPHOSPHAERIA	--	-	--	-	--	-	500	10
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-
...PERIDINIACEAE								
....PERIDINIUM	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
SAMPLING METHOD: EDI

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
DEC					
27...	1200	1370	.300	.312	27
SEP					
02...	1100	21450	.011	.002	37

SAMPLING METHOD: Polyethelene Strip.

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	160	168	179	215	190	197	221	183	140	158	165
2	151	159	171	180	214	189	195	219	183	142	159	165
3	152	158	173	179	208	190	193	222	177	142	161	165
4	154	157	173	178	202	192	192	225	173	143	162	165
5	158	156	172	184	196	192	191	227	173	139	161	167
6	158	154	176	187	188	192	190	220	171	137	161	170
7	155	153	176	185	186	189	190	222	169	140	158	166
8	155	153	176	183	186	187	191	218	168	145	158	168
9	156	154	176	184	185	189	192	216	170	143	158	168
10	157	155	178	184	186	190	191	220	172	141	158	167
11	159	156	180	184	185	189	191	222	172	138	160	168
12	161	157	182	185	183	191	191	232	167	138	158	168
13	162	157	182	186	---	189	190	237	166	138	161	169
14	161	157	181	187	---	188	190	240	166	139	164	171
15	160	158	179	188	---	188	189	242	165	141	166	171
16	161	160	176	189	---	191	190	240	166	143	166	171
17	162	162	175	190	---	192	190	230	163	145	166	170
18	162	165	176	192	---	195	192	220	161	146	165	170
19	164	168	179	196	---	197	194	214	157	145	166	172
20	166	170	181	196	---	198	196	211	157	148	166	171
21	166	169	182	198	---	198	199	206	153	152	168	169
22	166	168	183	202	---	199	198	204	153	154	168	166
23	166	171	184	203	---	202	198	201	154	152	168	166
24	166	175	188	202	183	201	199	198	155	149	169	166
25	167	175	190	202	186	200	202	196	159	152	169	166
26	166	171	188	204	186	199	202	190	155	152	168	168
27	162	168	185	206	188	195	204	188	152	154	168	170
28	160	165	185	209	189	195	208	186	152	152	165	171
29	160	164	182	212	---	196	214	185	149	156	166	172
30	160	166	180	213	---	197	220	185	144	156	165	169
31	160	---	179	214	---	198	---	185	---	157	165	---
MEAN	160	162	179	193	192	193	196	214	164	146	163	168

WTR YR 1977 MEAN 177 MAX 242 MIN 137

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18.5	18.0	13.0	13.0	9.5	9.5	7.0	7.0	6.0	5.5	5.5	5.5
2	18.5	18.0	13.0	13.0	9.5	9.5	7.0	7.0	6.0	5.5	6.0	5.5
3	18.0	17.5	13.0	13.0	9.5	9.5	7.0	6.5	5.5	5.5	6.0	6.0
4	17.5	17.0	13.0	13.0	9.5	9.0	7.0	7.0	5.5	5.5	6.0	5.5
5	17.5	17.0	13.0	13.0	9.0	9.0	7.0	6.5	5.5	5.5	6.0	5.0
6	17.5	17.0	13.0	12.5	9.0	9.0	6.5	6.5	5.5	5.5	6.0	5.5
7	17.5	17.0	12.5	12.5	9.0	8.5	6.5	6.0	5.5	5.5	6.0	6.0
8	17.5	17.0	13.0	12.5	9.0	9.0	6.0	6.0	5.5	5.5	6.0	6.0
9	17.5	17.5	13.0	12.5	9.0	8.5	6.0	6.0	5.5	5.5	6.0	6.0
10	17.5	17.0	12.5	12.5	8.5	8.5	---	---	6.0	5.5	6.0	5.5
11	17.5	17.0	12.5	12.5	8.5	8.5	---	---	6.0	5.5	6.0	5.5
12	17.5	17.0	12.5	12.0	8.5	8.0	---	---	6.0	6.0	6.0	6.0
13	17.0	16.5	12.5	12.0	8.5	8.0	---	---	---	---	6.0	5.5
14	16.5	16.5	12.0	12.0	8.0	8.0	---	---	---	---	6.0	5.5
15	16.5	16.0	12.0	12.0	8.0	8.0	---	---	---	---	6.0	5.5
16	16.5	16.0	12.0	12.0	8.0	8.0	---	---	---	---	6.0	6.0
17	16.0	15.5	12.0	12.0	8.0	8.0	---	---	---	---	6.0	6.0
18	15.5	15.0	12.0	12.0	8.0	8.0	---	---	---	---	6.0	6.0
19	15.0	14.5	12.0	12.0	8.0	8.0	---	---	---	---	6.5	6.0
20	15.0	14.5	12.0	11.5	8.0	7.5	---	---	---	---	6.5	6.0
21	15.0	14.5	11.5	11.5	8.0	7.5	6.0	5.5	---	---	6.5	6.0
22	15.0	14.5	11.5	11.5	7.5	7.5	6.0	5.5	---	---	7.0	6.0
23	14.5	14.5	11.5	11.0	8.0	7.5	5.5	5.5	---	---	7.0	7.0
24	14.5	14.0	11.0	11.0	8.0	7.5	5.5	5.5	5.0	5.0	7.5	7.0
25	14.5	14.0	11.0	11.0	7.5	7.5	5.5	5.5	5.0	5.0	7.5	7.0
26	14.5	14.0	11.0	10.5	7.5	7.5	5.5	5.5	5.0	5.0	7.5	7.0
27	14.0	14.0	11.0	10.0	8.0	7.5	5.5	5.5	5.5	5.0	7.5	7.0
28	14.0	14.0	10.5	10.0	8.0	7.5	5.5	5.5	5.5	5.5	7.5	7.0
29	14.0	13.5	10.0	10.0	7.5	7.5	5.5	5.5	---	---	7.5	7.0
30	13.5	13.5	10.0	9.5	7.5	7.5	5.5	5.5	---	---	8.0	7.0
31	13.5	13.0	---	---	7.5	7.0	6.0	5.5	---	---	7.5	7.5
MONTH	18.5	13.0	13.0	9.5	9.5	7.0	7.0	5.5	6.0	5.0	8.0	5.0

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.5	7.5	12.0	11.5	15.0	14.5	19.5	19.5	20.5	20.0	20.5	19.5
2	8.0	7.5	12.0	11.5	15.0	14.5	19.5	19.0	20.5	20.0	20.5	19.5
3	8.0	7.5	12.0	11.5	15.0	15.0	19.5	19.0	21.0	20.5	20.5	19.5
4	8.5	8.0	12.0	11.0	15.0	15.0	19.0	19.0	21.0	21.0	20.0	19.5
5	8.5	8.5	12.0	11.5	15.5	15.0	19.0	18.5	21.5	21.0	20.0	19.5
6	9.0	8.0	12.0	11.5	16.0	15.5	19.5	18.5	21.5	21.0	19.5	19.5
7	9.0	8.5	12.0	11.5	16.5	16.0	19.5	19.0	21.5	21.0	19.5	19.0
8	9.0	9.0	12.0	11.5	16.5	16.0	19.5	19.0	21.5	21.0	19.0	18.5
9	9.0	9.0	12.5	11.5	16.5	16.0	19.0	18.5	21.5	21.0	19.0	18.5
10	9.0	8.5	12.5	12.0	16.5	16.0	19.0	18.5	21.5	21.5	19.0	18.5
11	9.5	8.5	12.5	12.0	16.5	16.0	19.0	19.0	22.0	21.5	19.0	18.5
12	9.5	9.0	12.5	12.0	16.5	16.0	19.0	19.0	22.0	22.0	19.0	18.5
13	9.5	9.0	12.5	12.5	17.0	16.0	19.5	19.0	22.0	21.5	18.5	18.5
14	9.0	8.5	12.5	12.0	17.0	16.5	19.0	19.0	22.0	21.5	18.5	18.5
15	9.0	8.5	12.5	12.5	17.5	17.0	19.5	19.0	22.0	21.5	18.5	18.0
16	9.5	9.0	12.5	12.5	17.5	17.0	19.5	19.5	22.0	21.5	18.0	18.0
17	9.5	9.0	12.5	12.5	18.0	17.5	19.5	19.0	22.5	22.0	18.0	17.5
18	9.5	9.0	13.0	12.5	18.0	18.0	19.5	19.0	22.5	22.0	18.0	17.5
19	9.5	9.0	13.0	12.5	18.0	18.0	19.5	19.0	22.0	21.5	17.5	17.0
20	9.5	9.0	13.0	13.0	18.0	18.0	19.5	19.5	21.5	21.5	17.0	17.0
21	10.0	9.5	13.5	13.0	18.5	18.0	19.5	19.5	21.5	21.0	19.0	17.0
22	10.0	9.5	13.5	13.5	19.0	18.5	20.0	19.5	21.0	21.0	19.0	18.5
23	10.5	10.0	13.5	13.5	19.0	18.5	20.0	19.5	21.0	21.0	18.5	18.5
24	10.5	10.0	13.5	13.5	19.0	18.5	20.5	20.0	21.0	20.5	18.5	18.0
25	11.0	10.5	14.0	13.5	19.5	19.0	20.5	20.0	21.0	20.5	18.0	18.0
26	11.5	10.5	14.0	13.5	19.5	19.0	20.5	20.0	21.5	20.0	18.0	18.0
27	11.5	11.0	14.5	14.0	19.5	19.0	20.0	20.0	21.0	20.0	16.5	16.5
28	12.0	11.0	14.5	14.0	19.5	19.0	20.0	20.0	21.0	20.0	16.5	16.5
29	12.0	11.0	14.5	14.0	19.5	19.0	20.0	19.5	21.0	19.5	16.5	16.5
30	12.0	11.0	14.5	14.5	19.5	19.0	20.0	20.0	20.5	19.5	16.5	16.0
31	---	---	14.5	14.5	---	---	20.5	20.0	20.5	19.5	---	---
MONTH	12.0	7.5	14.5	11.0	19.5	14.5	20.5	18.5	22.5	19.5	20.5	16.0
YEAR	22.5	5.0										

14143500 WASHOUGAL RIVER NEAR WASHOUGAL, WA

LOCATION.--Lat 45°37'23", long 122°17'35", in SW¼SE¼ sec.27, T.2 N., R.4 E., Clark County, Hydrologic Unit 17080001, on right bank 0.6 mi (1.0 km) upstream from Cougar Creek, 4.0 mi (6.4 km) northeast of Washougal, and at mile 9.2 (14.8 km).

DRAINAGE AREA.--108 mi² (280 km²).

PERIOD OF RECORD.--September 1944 to current year. Chemical analyses November 1961 to September 1970.

REVISED RECORDS.--WSP 1248: 1945-47, 1949-50, 1951(P). WSP 1738: 1948(M).

GAGE.--Water-stage recorder. Altitude of gage is 175 ft (53 m), from topographic map. Prior to Dec. 1, 1961, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records excellent. Minor regulation by fish hatchery above station. Some small diversions for domestic use.

AVERAGE DISCHARGE.--33 years, 885 ft³/s (25.06 m³/s), 111.28 in/yr (2,827 mm/yr), 641,200 acre-ft/yr (791 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s (640 m³/s) Jan. 20, 1972, gage height, 16.21 ft (4.941 m) from rating extended above 10,500 ft³/s (297 m³/s); minimum observed, 41 ft³/s (1.16 m³/s) Sept. 10, 1958; minimum gage height, 1.35 ft (0.411 m) Sept. 27, 28, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft³/s (227 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	2200	*4,380	124	*6.82	2.079

Minimum discharge, 60 ft³/s (1.70 m³/s) Aug. 18, gage height, 1.59 ft (0.485 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	777	166	329	257	2930	1480	289	965	148	81	231
2	103	464	160	309	223	2090	1400	502	770	143	79	182
3	120	325	155	274	208	2070	1130	686	698	145	77	276
4	95	264	150	257	202	1550	1010	1110	1880	150	79	1100
5	90	229	145	235	196	1180	1090	1150	1600	143	75	950
6	88	202	143	217	190	1090	1260	882	1070	136	74	507
7	86	185	155	210	182	2740	1310	728	805	129	72	343
8	82	174	235	200	179	2870	1360	662	656	124	72	265
9	82	163	524	190	174	2350	1090	578	554	122	71	225
10	99	153	442	180	229	1660	833	560	475	124	69	197
11	109	145	361	190	278	1250	698	513	420	120	67	177
12	93	138	309	338	356	1370	638	442	385	117	66	162
13	88	133	271	716	578	1230	704	400	347	120	65	148
14	84	133	247	662	453	1060	656	400	321	113	65	139
15	82	176	232	686	365	903	614	491	297	111	64	138
16	81	352	220	777	317	826	608	542	278	109	64	133
17	81	410	214	680	285	740	554	746	260	109	62	132
18	81	608	229	596	260	861	497	764	247	124	60	138
19	79	431	205	530	241	1550	447	650	238	107	62	184
20	79	329	193	464	250	1230	415	560	229	101	64	325
21	79	274	185	405	297	1020	405	519	232	97	67	720
22	81	247	179	361	1000	987	405	442	214	95	67	468
23	81	223	211	321	987	1090	480	420	202	93	66	524
24	90	205	199	293	758	1190	497	410	190	91	104	1290
25	420	250	238	271	777	1060	491	361	182	90	110	1370
26	309	214	1150	257	1130	952	436	453	176	93	638	1040
27	211	196	1370	244	1680	2430	370	548	168	90	177	696
28	174	187	819	232	3370	1730	343	798	166	88	182	529
29	158	182	602	220	---	1320	325	777	158	88	269	545
30	143	174	464	211	---	1100	301	662	155	84	790	574
31	297	---	380	217	---	1090	---	924	---	82	367	---
TOTAL	3833	7963	10553	11072	15422	45519	21867	18969	14318	3486	4225	13708
MEAN	124	265	340	357	551	1468	728	612	477	112	136	457
MAX	420	777	1370	777	3370	2930	1480	1150	1880	150	790	1370
MIN	79	133	143	180	174	740	301	289	155	82	60	132
CFSM	1.15	2.45	3.15	3.31	5.10	13.6	6.74	5.67	4.42	1.04	1.26	4.23
IN.	1.32	2.74	3.63	3.81	5.31	15.68	7.53	6.53	4.93	1.20	1.46	4.72
AC-FT	7600	15750	20930	21960	30590	90290	43330	37630	28400	6910	8380	27190

CAL YR 1976 TOTAL 233467 MEAN 638 MAX 7190 MIN 79 CFSM 5.91 IN 80.42 AC-FT 463100
WTR YR 1977 TOTAL 170895 MEAN 468 MAX 3370 MIN 60 CFSM 4.33 IN 58.86 AC-FT 339000

14144100 WASHOUGAL RIVER AT WASHOUGAL, WA

LOCATION.--Lat 45°35'11", long 122°21'10", in SE¼NE¼ sec.7, T.1 N., R.4 E., Clark County, Hydrologic Unit 17080001, north edge of Washougal, and downstream from Little Washougal River.

PERIOD OF RECORD.--Water years 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT												
05...	1130	110	42	8.4	13.0	--	2	11.6	.02	.03	.02	.00
19...	1105	96	45	7.8	9.0	25	5	12.1	.01	.04	.02	.01
NOV												
03...	1120	396	32	7.4	10.7	21	15	11.4	.28	.05	.02	.00
17...	1025	500	36	7.2	10.3	29	6	11.0	.28	.02	.01	.00
DEC												
08...	1110	218	39	7.4	6.6	21	1	12.7	.20	.02	.02	.00
15...	1025	283	32	7.4	6.1	17	3	13.2	.22	.03	.01	.00
JAN												
05...	1030	287	44	7.3	.7	13	1	14.5	.26	.04	.01	.00
19...	1030	647	34	7.1	6.4	17	1	12.2	.32	.04	.01	.00
FEB												
09...	1130	212	39	7.7	3.7	13	4	13.3	.22	.02	.01	.01
16...	1015	387	32	7.4	6.6	33	3	12.3	.27	.05	.02	.01
MAR												
09...	1130	2870	27	7.2	5.7	21	5	12.1	.33	.02	.01	.00
23...	1010	1330	30	7.1	7.5	17	3	12.2	.24	.07	.01	.00
APR												
06...	1030	1540	25	7.1	8.1	8	2	11.4	.16	.04	.01	.00
20...	1045	506	30	7.4	8.8	17	2	11.9	.15	.04	.01	.00
MAY												
04...	1000	1240	29	6.9	8.0	17	5	12.0	.26	.03	.02	.00
18...	1030	932	30	6.8	9.4	21	2	12.0	.30	.02	.02	.00
JUN												
08...	1040	800	27	7.7	13.0	13	1	11.4	.15	.03	.01	.00
22...	1100	261	35	7.4	15.7	21	1	10.7	.02	.03	.01	.00
JUL												
13...	1110	146	48	8.2	15.9	21	3	11.1	.09	.06	.02	.00
27...	1200	110	45	8.2	20.8	21	2	10.7	.10	.06	.01	.00
AUG												
10...	1050	84	47	8.1	22.7	21	1	10.2	.13	.05	.03	.01
24...	1055	127	53	7.4	16.6	38	3	10.6	.27	.06	.04	.01
SEP												
14...	1115	170	38	7.4	15.2	25	2	10.5	.11	.03	.01	.00
28...	1050	645	32	6.4	11.5	29	2	11.3	.21	.05	.01	.00

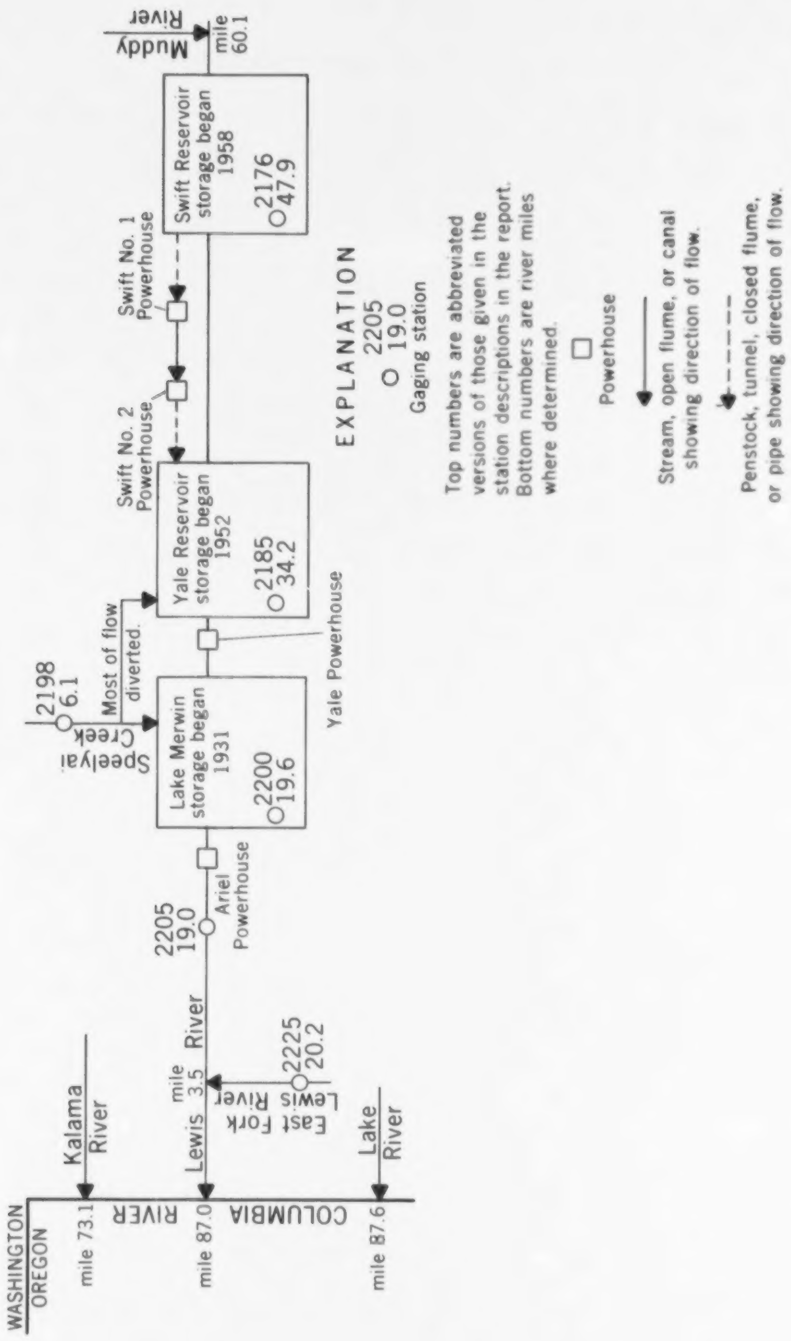
WASHINGTON
OREGON
COLUMBIA RIVER
mile 73.1
mile 87.0
mile 87.6
Kalama River
Lewis River
Lake River
mile 3.5
East Fork Lewis River
2225
20.2
2205
19.0
Ariel Powerhouse
Lake Merwin storage began 1931
2200
19.6
Speelyai Creek
2198
6.1
Most of flow diverted.
Yale Powerhouse
Yale Reservoir storage began 1952
2185
34.2
Swift No. 2 Powerhouse
Swift No. 1 Powerhouse
Swift Reservoir storage began 1958
2176
47.9
mile 60.1
Muddy River
EXPLANATION
2205
19.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 20. Gaging stations in Lewis River basin.

14219800 SPEELYAI CREEK NEAR COUGAR, WA

LOCATION.--Lat 46°00'28", long 122°20'46", in NW¼NW¼ sec.17, T.6 N., R.4 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 3.8 mi (6.1 km) southwest of Cougar and at mile 6.1 (9.8 km).

DRAINAGE AREA.--12.6 mi² (32.6 km²).

PERIOD OF RECORD.--May 1959 to current year.

REVISED RECORDS.--WSP 1718: 1959.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft (152 m), from topographic map. Prior to Nov. 21, 1959, at site 250 ft (76 m) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station. Greater part of flow diverted into Yale Reservoir (see sta 14218500), 240 ft (73 m) downstream from station.

AVERAGE DISCHARGE.--18 years, 108 ft³/s (3.059 m³/s), 116.40 in/yr (2,957 mm/yr), 78,250 acre-ft/yr (96.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,600 ft³/s (102 m³/s) probably Nov. 20, 1962 (by slope-area measurement, gage height not determined); minimum observed, 1.8 ft³/s (0.051 m³/s) Sept. 24-29, 1967, gage height, 0.24 ft (0.073 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1900	*562	15.9	*4.07	1.241

Minimum discharge, 2.7 ft³/s (0.076 m³/s) Aug. 17, 18, gage height, 1.58 ft (0.482 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	80	18	47	37	345	163	42	237	13	4.6	28
2	10	49	17	43	31	248	144	64	168	12	4.5	22
3	9.0	37	17	38	29	191	120	94	129	12	4.3	27
4	7.5	31	16	35	27	149	115	117	245	15	4.2	87
5	7.1	27	15	31	26	118	141	116	210	14	4.1	71
6	6.8	23	16	29	25	113	173	97	146	13	4.0	49
7	6.6	21	18	27	23	321	197	87	108	12	3.8	37
8	6.6	19	38	26	23	393	203	93	83	11	3.7	30
9	6.6	18	46	24	22	345	161	81	69	10	3.6	26
10	6.8	17	39	24	26	234	121	73	58	9.5	3.5	23
11	6.6	16	35	30	25	171	100	64	51	9.0	3.3	20
12	6.6	15	31	40	47	158	90	56	46	9.0	3.2	18
13	6.6	14	29	42	55	124	95	51	41	9.5	3.2	16
14	6.6	16	27	41	48	108	87	48	37	9.0	3.0	16
15	6.4	22	26	49	43	92	82	50	34	8.5	3.0	15
16	6.4	32	24	56	39	82	78	48	31	8.0	3.0	15
17	6.4	40	25	54	36	74	70	51	29	7.5	2.8	15
18	6.4	45	24	56	33	75	63	48	27	8.5	2.8	18
19	6.4	38	22	54	31	80	57	45	25	7.5	3.0	37
20	6.4	32	21	49	32	77	55	42	24	7.0	3.2	92
21	6.1	29	20	45	40	79	55	42	24	6.6	3.3	88
22	6.1	26	20	41	85	88	61	38	22	6.4	3.3	65
23	6.1	24	23	38	76	111	70	38	20	6.2	6.1	92
24	9.9	25	20	35	66	124	73	36	19	6.0	13	156
25	44	29	38	32	71	112	74	34	18	5.8	8.9	170
26	26	24	146	30	76	157	69	47	17	6.0	16	135
27	20	22	160	28	183	337	59	55	16	5.6	7.2	98
28	17	21	106	27	445	228	53	83	15	5.4	29	77
29	15	20	81	25	---	161	49	82	15	5.2	33	70
30	13	19	65	24	---	125	45	76	14	5.0	109	63
31	78	---	54	30	---	129	---	186	---	4.8	42	---
TOTAL	379.8	831	1237	1150	1700	5149	2923	2084	1978	268.0	341.6	1676
MEAN	12.3	27.7	39.9	37.1	60.7	166	97.4	67.2	65.9	8.65	11.0	55.9
MAX	78	80	160	56	445	393	203	186	245	15	109	170
MIN	6.1	14	15	24	22	74	45	34	14	4.8	2.8	15
CFSM	.98	2.20	3.17	2.94	4.82	13.2	7.73	5.33	5.23	.69	.87	4.44
IN.	1.12	2.45	3.65	3.39	5.02	15.20	8.63	6.15	5.84	.79	1.01	4.95
AC-FT	753	1650	2450	2280	3370	10210	5800	4130	3920	532	678	3320

CAL YR 1976 TOTAL 28190.3 MEAN 77.0 MAX 1150 MIN 6.1 CFSM 6.11 IN 83.23 AC-FT 55920
WTR YR 1977 TOTAL 19717.4 MEAN 54.0 MAX 445 MIN 2.8 CFSM 4.29 IN 58.21 AC-FT 39110

RESERVOIRS IN LEWIS RIVER BASIN, WA

14217600 SWIFT RESERVOIR.--Lat 46°03'38", long 122°11'44", in NE¼SW¼ sec.28, T.7 N., R.5 E., Skamania County, Hydrologic Unit 17080002, at the intake structure near left bank on Swift Dam on Lewis River 5.0 mi (8.0 km) east of Cougar and at mile 47.9 (77.1 km). DRAINAGE AREA, 481 mi² (1,246 km²). PERIOD OF RECORD, September September 1958 to current year. GAGE, water-stage recorder and long distance indicator in powerhouse. Datum of gage is at mean sea level (levels by Pacific & Power Light Co.).

Reservoir is formed by rock and earthfill dam; storage began Sept. 29, 1958; dam completed in December 1958. Usable capacity, 446,550 acre-ft (551 hm³) between elevations 878 ft (267.6 m), lower limit for economic operation, and 1,000.5 ft (304.95 m), maximum operating limit. Dead storage unknown. Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 759,100 acre-ft (936 hm³) Nov. 15, 1975, elevation, 1,000.77 ft (305.035 m); minimum since reservoir was first filled, 325,100 acre-ft (401 hm³) May 1, 1967, elevation, 883.60 ft (269.321 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 757,006 acre-ft (933 hm³) June 5, elevation, 1,000.31 ft (304.894 m); minimum, 355,990 acre-ft (439 hm³) Jan. 31, elevation, 894.12 ft (272.528 m).

14218500 YALE RESERVOIR. Lat 45°57'50", long 122°19'53", in SE¼NE¼ sec.32, T.6 N., R.4 E., Clark County, Hydrologic Unit 17080002, at left end of Yale Dam on Lewis River just upstream from intake, 500 ft (152 m) upstream from powerhouse, 1.0 mi (1.6 km) upstream from Canyon Creek, 3.2 mi (5.1 km) southeast of Yale, and at mile 34.2 (55.0 km). DRAINAGE AREA, 596 mi² (1,544 km²). PERIOD OF RECORD, August 1952 to current year. Chemical analyses February 1969 to June 1971, water temperature June 1969 to June 1971, and sediment records February 1970 to September 1971. GAGE, water-stage recorder and and long distance indicator in powerhouse. Datum of gage is at mean sea level (levels by Pacific Power & Light Co.). Prior to Feb. 1, 1954, nonrecording indicator gage at same site and datum.

Reservoir is formed by rock and earthfill dam; storage began July 31, 1952, dam completed in 1952. Usable capacity, 189,530 acre-ft (234 hm³) between elevations 430 ft (131.1 m), lower limit for economic operation, and 490 ft (149.4 m), top of spillway gates. Dead storage below elevation 417 ft (127.1 m), 178,050 acre-ft (220 hm³). Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Water-stage recorder graph and capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 402,500 acre-ft (496 hm³) May 13, 1961, elevation, 490.15 ft (149.398 m); minimum observed since reservoir was first filled, 227,600 acre-ft (281 hm³) Feb. 22, 1957, elevation, 435.65 ft (132.786 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 401,516 acre-ft (495 hm³) July 24, elevation, 489.93 ft (149.331 m); minimum, 233,889 acre-ft (288 hm³) Jan. 31, elevation, 437.87 ft (133.463 m).

14220000 LAKE MERWIN.--Lat 45°57'23", long 122°33'13", in SW¼SW¼ sec.34, T.6 N., R.2 E., Clark County, Hydrologic Unit 17080002, on left end of dam on Lewis River at Ariel and at mile 19.6 (31.5 km). DRAINAGE AREA, 730 mi² (1,890 km²). PERIOD OF RECORD, March 1931 to current year. GAGE, water-stage recorder and long distance indicator in powerhouse. Datum of gage is at mean sea level (levels by Pacific Power & Light Co.).

Reservoir is formed by combination gravity-concrete-arch dam; some storage began March 1931; completed May 13, 1931. Usable capacity 246,000 acre-ft (303 hm³) between elevations 165 ft (50.3 m), lower limit of regulation set by Federal Power Commission, and 235 ft (71.6 m) top of spillway gates. Additional storage of 18,200 acre-ft (22.4 hm³) is provided by flashboards, elevation, 239.6 ft (73.03 m). Unused storage, below elevation 165 ft (50.3 m), 159,000 acre-ft (196 hm³). Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD: Maximum contents during the period 1931-52 not determined; maximum during period 1953-77, 424,000 acre-ft (523 hm³) Jan. 24, 1959, elevation, 239.86 ft (73.109 m); minimum observed since reservoir was first filled, 164,200 acre-ft (202 hm³) Dec. 5, 1936, elevation, 166.7 ft (50.81 m).

EXTREMES FOR CURRENT YEAR: Maximum contents, 422,166 acre-ft (521 hm³) Aug. 2, elevation, 239.44 ft (72.981 m); minimum, 355,986 acre-ft (439 hm³) Feb. 25, elevation, 222,28 ft (67.751 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	14217600 SWIFT RESERVOIR			14218500 YALE RESERVOIR			14220000 LAKE MERWIN		
Sept. 30....	996.77	740,895	-	479.40	362,936	-	236.02	408,608	-
Oct. 31....	954.46	563,224	-177,671	480.18	365,701	+2,765	235.09	404,951	-3,657
Nov. 30....	937.89	501,334	-61,890	460.14	299,315	-66,386	233.79	399,868	-5,083
Dec. 31....	926.33	460,285	-41,049	467.09	321,292	+21,977	228.02	377,671	-22,197
CAL YR 1976	-	-	-230,213	-	-	-68,192	-	-	-22,158
Jan. 31....	894.22	356,290	-103,995	439.19	237,584	-83,708	227.29	374,895	-2,776
Feb. 28....	915.77	424,721	+68,431	452.02	274,670	+37,086	223.63	361,058	-13,837
Mar. 31....	957.38	574,612	+149,891	479.39	362,901	+88,231	234.65	403,228	+42,170
Apr. 30....	995.31	734,325	+159,713	486.78	389,706	+26,805	237.24	413,427	+10,199
May 31....	999.90	755,120	+20,795	489.58	400,197	+10,491	238.30	417,630	+4,203
June 30....	999.84	754,844	-276	489.66	400,498	+301	237.64	415,011	-2,619
July 31....	999.22	751,992	-2,852	489.56	400,121	-377	239.03	420,533	+5,522
Aug. 31....	998.74	749,797	-2,195	489.22	398,839	-1,282	238.69	419,180	-1,353
Sept. 30....	998.55	748,932	-865	479.17	362,122	-36,717	236.72	411,371	-7,809
WTR YR 1977	-	-	+8,037	-	-	-814	-	-	+2,763

14220200 LEWIS RIVER AT MERWIN DAM AT ARIEL, WA

LOCATION.--Lat 45°57'21", long 122°33'20", in SE¼SE¼ sec.33, T.6 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, at bridge 500 ft (152 m) below Merwin Dam and 2,500 ft (760 m) upstream from gaging station.

PERIOD OF RECORD.--October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)
OCT												
05...	0935	3840	40	7.0	14.1	--	1	8.7	12	0	3.4	.9
19...	0850	6260	46	7.2	14.8	4	3	8.7	13	0	3.9	.9
NOV												
03...	0915	6190	43	7.2	13.7	25	1	9.4	14	0	3.8	1.1
17...	0810	1450	45	7.2	12.7	8	8	10.1	15	2	4.1	1.1
DEC												
08...	0855	1350	46	7.3	9.6	13	1	11.0	14	0	3.6	1.1
15...	0830	2140	44	7.3	9.4	8	2	11.0	13	0	3.7	1.0
JAN												
05...	0820	6390	46	7.4	7.8	7	1	10.9	14	0	3.6	1.2
19...	0810	7560	49	7.2	6.2	13	1	11.1	13	0	4.0	.8
FEB												
09...	0915	743	50	7.6	5.9	8	1	12.5	14	0	3.8	1.0
16...	0810	778	49	7.3	6.0	13	4	12.4	15	0	4.5	.9
MAR												
09...	0915	820	48	7.1	5.9	4	3	12.3	13	0	3.7	.9
23...	0800	799	40	7.2	6.6	8	2	12.6	15	0	3.7	1.3
APR												
06...	0820	820	49	7.2	6.5	4	1	11.7	13	0	3.7	.9
20...	0840	1830	45	7.2	6.6	13	1	11.5	13	0	4.0	.8
MAY												
04...	0800	4710	45	7.1	7.0	4	3	11.7	13	0	3.9	.9
18...	0830	2590	45	6.8	7.8	8	1	10.6	13	0	3.6	1.0
JUN												
08...	0840	5960	40	7.2	9.9	4	1	11.0	13	0	3.7	1.0
22...	0900	1750	45	6.6	10.0	8	1	10.6	12	0	3.5	.9
JUL												
13...	0900	1060	44	7.2	10.8	4	3	10.9	13	0	3.9	.9
27...	0930	1030	65	6.8	11.5	8	2	10.9	16	1	5.1	.9
AUG												
10...	0750	848	49	6.8	11.2	8	1	10.6	17	2	5.0	1.0
24...	0805	785	50	6.5	11.4	21	2	10.3	15	0	4.5	1.0
SEP												
14...	0845	3040	47	6.2	13.0	13	1	8.7	14	0	3.9	1.0
28...	0845	2600	45	6.6	14.2	25	1	8.8	13	0	3.7	1.0

DATE	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
OCT											
05...	2.7	.5	22	0	18	3.5	1.3	1.1	.01	.02	.01
19...	2.6	.4	22	0	18	2.2	2.3	1.3	.00	.03	.01
NOV											
03...	2.4	.5	20	0	16	2.0	1.6	1.1	.00	.02	.01
17...	2.8	.5	16	0	13	1.6	2.3	1.9	.00	.03	.01
DEC											
08...	3.1	.6	22	0	18	1.8	2.0	1.4	.01	.03	.01
15...	2.9	.5	23	0	19	1.8	1.1	1.4	.01	.04	.01
JAN											
05...	2.9	.5	21	0	17	1.3	2.6	1.3	.26	.02	.01
19...	2.9	.5	21	0	17	2.1	2.4	1.4	.03	.02	.01
FEB											
09...	2.7	.5	21	0	17	.8	1.3	1.5	.03	.07	.01
16...	2.8	.5	21	0	17	1.7	3.2	1.0	.04	.02	.01
MAR											
09...	2.9	.5	20	0	16	2.5	6.4	1.3	.05	.02	.01
23...	2.9	.5	20	0	16	2.0	2.7	1.5	.10	.06	.01
APR											
06...	2.6	.5	19	0	16	1.9	1.9	1.5	.09	.03	.00
20...	2.6	.5	19	0	16	1.9	4.2	1.2	.14	.02	.01
MAY											
04...	2.8	.6	18	0	15	2.3	5.3	1.4	.14	.02	.01
18...	2.5	.4	17	0	14	4.3	1.5	1.3	.16	.04	.03
JUN											
08...	2.6	.3	18	0	15	1.8	1.4	1.4	.10	.03	.01
22...	2.8	.4	18	0	15	7.2	.8	1.5	.06	.06	.01
JUL											
13...	2.6	.4	18	0	15	1.8	1.1	1.5	.27	.06	.01
27...	2.7	.4	19	0	16	4.8	1.6	1.6	.09	.03	.01
AUG											
10...	2.7	.4	18	0	15	4.6	2.2	1.2	--	--	--
24...	2.5	.4	19	0	16	9.6	1.2	1.6	.38	.02	.01
SEP											
14...	2.3	.4	19	0	16	19	.9	1.6	.04	.02	.00
28...	2.8	.5	21	0	17	8.4	1.1	1.6	.03	.03	.00

14220200 LEWIS RIVER AT MERWIN DAM AT ARIEL, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT											
05...	.00	--	--	--	0	4	7	.0	--	--	10
19...	.00	--	--	--	0	0	6	.0	--	--	0
NOV											
03...	.00	--	--	--	0	6	1	.0	--	--	10
17...	.00	--	--	--	0	1	18	.0	--	--	0
DEC											
08...	.00	--	--	--	0	3	13	.1	--	--	10
15...	.00	--	--	--	0	0	5	.0	--	--	30
JAN											
05...	.00	--	--	--	0	0	5	.2	--	--	10
19...	.00	--	--	--	0	1	7	.1	--	--	0
FEB											
09...	.00	--	--	--	0	1	5	.0	--	--	0
16...	.00	--	--	--	0	2	12	.0	--	--	10
MAR											
09...	.00	--	--	--	0	0	4	.5	--	--	0
23...	.00	--	--	--	0	1	12	.0	--	--	0
APR											
06...	.00	--	--	--	0	0	10	.0	--	--	0
20...	.01	--	--	--	0	0	4	.0	--	--	10
MAY											
04...	.00	--	--	--	0	2	18	.0	--	--	6
18...	.00	--	--	--	0	0	4	.4	--	--	0
JUN											
08...	.00	--	--	--	0	0	21	.1	--	--	0
22...	.00	--	--	--	0	0	3	.0	--	--	4
JUL											
13...	.00	--	--	--	0	0	5	.0	--	--	0
27...	.00	--	--	--	0	1	5	.1	--	--	0
AUG											
10...	--	--	--	--	0	2	6	--	--	--	10
24...	.00	--	--	--	0	0	6	.0	--	--	0
SEP											
14...	.00	--	--	--	0	1	2	.0	--	--	0
28...	.00	0	0	0	0	0	10	.0	0	0	0

14220500 LEWIS RIVER AT ARIEL, WA

LOCATION.--Lat 45°57'07", long 122°33'46", in NW¼NE¼ sec.4, T.5 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 0.4 mi (0.6 km) southeast of Ariel, 0.5 mi (0.8 km) downstream from Ariel Dam and powerplant, 3.3 mi (5.3 km) upstream from Cedar Creek, and at mile 19.0 (30.6 km).

DRAINAGE AREA.--731 mi² (1,893 km²).

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi (0.8 km) downstream; low discharges not equivalent due to local inflow. Chemical analyses July 1959 to June 1960, water temperature October 1950 to September 1963.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30(M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft (13.41 m) above mean sea level, unadjusted (levels by Pacific Power and Light Co.) July to November 1909, nonrecording gage at site 4 mi (6.4 km) upstream at different datum. July 27 to Oct. 28, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi (0.8 km) downstream at datums 3.90 ft (1.189 m) and 0.90 ft (0.274 m) higher, respectively, than present datum.

REMARKS.--Records excellent. No diversion above station. Flow regulated by Swift and Yale Reservoirs and Lake Merwin (see stations 14217600, 14218500, 14220000).

AVERAGE DISCHARGE.--54 years (water years 1924-77), 4,875 ft³/s (138 m³/s), 90.56 in/yr (2,300 mm/yr) 3,532,000 acre-ft/yr (4,350 hm³/yr), adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft³/s (3,650 m³/s) Dec. 22, 1933, gage height, 35.0 ft (10.67 m), from floodmarks, from rating curve extended above 56,000 ft³/s (1,590 m³/s) on basis of computation of peak flow over dam; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Ariel Dam); minimum daily, 1 ft³/s (0.028 m³/s) July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,800 ft³/s (334 m³/s) Dec. 2, gage height, 7.61 ft (2.320 m); minimum, 674 ft³/s (19.1 m³/s) Oct. 9, Feb. 21, gage height, 0.59 ft (0.180 m); minimum daily discharge, 745 ft³/s (21.1 m³/s) Feb. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3660	4880	3880	2430	1030	776	848	1730	6670	1330	970	3030
2	996	6190	9700	3170	1030	819	856	1880	6650	1340	994	1740
3	1090	6210	6520	7580	1030	826	854	3710	6650	1310	1000	813
4	1940	6230	5350	1670	890	816	860	5880	8230	1220	970	951
5	4320	4740	4600	4900	792	823	858	7630	9220	1340	986	1660
6	4130	3560	4290	9040	764	827	848	7520	7710	1350	1000	2590
7	3170	3110	1840	6000	770	819	837	7220	6980	1260	1010	3030
8	3910	1820	1370	7880	757	836	863	7280	5660	1140	986	3090
9	2470	2380	1780	6390	764	844	1010	6410	5290	970	890	2730
10	4660	2050	1510	1780	770	824	1030	5330	5320	1000	834	6050
11	3340	1490	1690	2700	757	848	1020	4680	3880	994	838	5900
12	5060	1330	2090	5490	750	836	1020	4020	3760	1000	837	3700
13	5310	2400	1670	5490	750	833	1760	3230	3650	1000	846	2050
14	4500	2240	4580	5420	764	843	1750	2980	3200	994	838	2970
15	2860	1410	2340	3960	757	827	1770	2870	2670	994	834	3020
16	2860	1420	2190	5780	757	831	1760	2930	2400	1010	813	3000
17	3200	1540	2640	3670	755	832	1760	2900	2260	1010	770	3000
18	5090	1660	1340	3730	758	827	1790	2600	2030	1010	785	3020
19	5900	1770	1340	3480	762	833	1790	2590	2080	1010	785	3000
20	5110	3700	1450	4480	774	831	1810	2580	1910	1010	789	3350
21	5000	6800	1400	3280	760	819	1770	2550	1720	1050	787	1460
22	4870	6250	1320	2780	767	822	1760	2580	1640	1020	783	914
23	6440	6610	1390	2740	756	829	1750	2590	1500	994	776	1360
24	4130	4920	1380	3510	762	832	1750	2580	1380	1010	777	3020
25	5240	1750	1340	7800	757	856	1760	2600	1360	1000	904	1900
26	4050	4880	1250	9260	758	847	1750	2600	1370	994	1380	2240
27	2480	6500	1330	7960	745	865	1750	2580	1410	1000	1370	3040
28	4850	1360	1360	8100	762	853	1750	2620	1430	1000	1340	3990
29	2250	6790	1330	8200	---	843	1740	2590	1350	994	1750	4720
30	5350	6520	1270	7160	---	843	1730	2560	1320	1000	4400	6230
31	6210	---	1340	1620	---	845	---	3960	---	994	5020	---
TOTAL	124384	113110	76800	158250	22264	25805	42566	115780	110620	33356	37088	88368
MEAN	4012	3770	2477	5105	795	832	1419	3735	3687	1076	1196	2946
MAX	6440	6800	9700	9260	1030	865	1810	7630	9220	1350	5020	6230
MIN	996	1330	1250	1620	745	776	837	1730	1320	970	776	813
AC-FT	246700	224400	152300	313900	44160	51180	84430	229600	219400	66160	73560	175300
†	-178,563	-133,359	-41,269	-190,479	+91,680	+280,292	+196,717	+35,849	-2,594	+2,293	-4,830	-45,391
MEAN‡	1,108	1,530	1,805	2,006	2,446	5,390	4,725	4,315	3,644	1,113	1,118	2,184
CFSM‡	1.52	2.09	2.47	2.74	3.35	7.37	6.46	5.90	4.98	1.52	1.53	2.99
IN.‡	1.75	2.34	2.85	3.17	3.48	8.50	7.21	6.81	5.56	1.76	1.76	3.33
AC-FT‡	68,140	91,040	111,000	123,400	135,800	331,500	281,100	265,400	216,800	68,450	68,730	129,900

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CAL YR 1976:  TOTAL  1,585,013   MEAN  4,331   MAX  19,400   MIN  668   AC-FT  3,144,000
     DO.....:  MEAN‡      3,890   CFSM‡  5.32   IN‡   72.41   AC-FT‡  2,823,000
WTR YR 1977:  TOTAL    948,367   MEAN  2,598   MAX   9,700   MIN  745   AC-FT  1,881,000
     DO.....:  MEAN‡      2,612   CFSM‡  3.57   IN‡   48.50   AC-FT‡  1,891,000
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† Change in contents, Lake Merwin, and Swift and Yale Reservoirs.
‡ Adjusted for change in contents.

14222500 EAST FORK LEWIS RIVER NEAR HEISSON, WA

LOCATION.--Lat 45°50'13", long 122°27'54", in NE¼NW¼ sec.17, T.4 N., R.3 E., Clark County, Hydrologic Unit 17080002, on right bank 60 ft (18 m) downstream from Basket Creek, 1.5 mi (2.4 km) northeast of Heisson, 3.4 mi (5.5 km) southwest of Yacolt, and at mile 20.2 (32.5 km).

DRAINAGE AREA.--125 mi² (325 km²).

PERIOD OF RECORD.--September 1929 to current year. Water temperatures June 1950 to August 1972.

GAGE.--Water-stage recorder. Datum of gage is 366.8 ft (111.80 m) above mean sea level (from river-profile survey).

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE.--48 years, 760 ft³/s (21.52 m³/s), 82.57 in/yr (2,097 mm/yr), 550,600 acre-ft/yr (679 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s (544 m³/s) Jan. 20, 1972, gage height, 12.92 ft (3.938 m); minimum, 29 ft³/s (0.82 m³/s) Nov. 3, 1935, Sept. 27, 28, 1967; minimum gage height, 0.04 ft (0.012 m) Nov. 3, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,100 ft³/s (173 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	2100	*5,390	96.0	*6.19	1.887

Minimum discharge, 44 ft³/s (1.25 m³/s) Aug. 18, gage height, 0.25 ft (0.076 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	409	117	329	277	2090	1300	386	1170	151	69	142
2	78	255	112	307	230	1710	1240	636	1020	147	67	113
3	92	196	109	278	210	1820	1040	843	900	147	66	153
4	76	164	106	260	201	1400	957	1050	1550	153	64	633
5	70	144	104	235	195	1100	1040	1010	1430	147	64	504
6	67	128	103	221	189	1030	1240	870	1100	139	62	205
7	62	117	115	205	182	2060	1360	766	875	128	61	209
8	59	111	207	190	177	2500	1470	744	732	121	60	166
9	61	104	351	180	172	2250	1130	677	676	118	58	140
10	73	99	287	170	206	1620	859	697	563	120	55	123
11	61	95	253	200	213	1270	714	665	486	115	53	109
12	69	91	228	320	316	1420	649	579	444	116	52	101
13	65	88	208	512	410	1230	766	519	404	119	51	91
14	62	88	192	482	352	1110	677	533	373	112	50	88
15	61	104	185	502	313	975	641	605	345	106	51	88
16	60	194	180	514	288	873	655	612	318	103	50	86
17	59	213	176	475	272	770	597	925	292	103	48	88
18	56	312	201	460	251	790	563	972	276	122	46	93
19	56	232	176	437	235	1220	493	807	266	101	49	147
20	56	196	163	400	249	1090	466	686	256	95	50	236
21	56	173	157	364	307	961	453	624	261	91	54	383
22	56	159	151	331	537	929	466	543	238	88	57	260
23	57	145	186	306	548	1010	561	520	218	85	58	305
24	64	136	175	284	492	984	616	502	203	83	133	719
25	235	181	250	267	512	865	644	446	193	81	86	770
26	181	152	1040	253	633	826	562	619	185	86	399	620
27	116	136	1240	240	929	1640	474	639	177	81	125	461
28	99	130	767	229	2130	1420	441	762	171	78	124	389
29	99	126	567	218	---	1190	423	714	163	79	152	500
30	89	122	448	209	---	1030	399	665	159	75	446	548
31	235	---	376	226	---	1040	---	1070	---	72	212	---
TOTAL	2610	4800	8930	9602	11028	40223	22854	21666	15376	3362	2972	8640
MEAN	84.2	160	288	310	394	1298	762	699	512	108	95.9	288
MAX	235	409	1240	514	2130	2500	1470	1070	1550	153	446	770
MIN	56	88	103	170	172	770	399	386	159	72	46	86
CFSM	.67	1.28	2.30	2.48	3.15	10.4	6.10	5.59	4.10	.86	.77	2.30
IN.	.78	1.43	2.66	2.86	3.28	11.97	6.80	6.45	4.58	1.00	.88	2.57
AC-FT	5180	9520	17710	19050	21870	79780	45330	42970	30400	6670	5890	17140

CAL YR 1976 TOTAL 202208 MEAN 552 MAX 5660 MIN 56 CFSM 4.42 IN 60.18 AC-FT 401100
WTR YR 1977 TOTAL 152061 MEAN 417 MAX 2500 MIN 46 CFSM 3.34 IN 45.25 AC-FT 301600

14222550 EAST FORK LEWIS RIVER NEAR DOLLAR CORNER, WA

LOCATION.--Lat 45°48'53", long 122°35'26", in NE¼SW¼ sec.20, T.4 N., R.2 E., Clark County, Hydrologic Unit 17080002, 2.4 mi (3.9 km) north of Dollar Corner, 2.9 mi (4.7 km) northwest of Battleground at Daybreak Park bridge.

PERIOD OF RECORD.--October 1976 to September 1977.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)
OCT												
05...	1030	71	60	7.4	12.3	--	4	10.5	21	0	6.3	1.2
19...	0950	54	65	7.4	8.0	17	4	11.2	30	5	6.6	3.4
NOV												
03...	1010	205	49	7.3	9.9	38	2	11.3	16	0	4.7	1.1
17...	0905	152	51	7.2	10.8	29	5	10.7	18	1	5.9	.9
DEC												
08...	1000	133	60	7.4	6.4	21	1	12.2	18	0	5.4	1.0
15...	0925	190	52	7.3	5.8	17	3	12.5	15	0	5.0	.7
JAN												
05...	0925	248	51	7.3	.8	13	1	14.1	14	2	4.2	.9
19...	0915	460	46	7.1	6.0	21	1	11.8	12	1	3.9	.6
FEB												
09...	1020	178	53	7.6	3.9	17	1	12.9	16	2	5.1	.8
16...	0910	310	49	7.3	6.0	33	2	12.0	13	1	4.1	.6
MAR												
09...	1020	2700	34	7.1	6.1	38	5	12.0	9	2	2.8	.5
23...	0855	1150	36	7.3	7.2	17	3	12.0	10	2	3.2	.6
APR												
06...	0915	1250	33	7.1	7.9	8	1	11.6	10	3	2.8	.7
20...	0925	510	39	7.2	8.1	17	2	11.5	12	0	3.7	.6
MAY												
04...	0855	1080	36	7.1	7.9	29	6	11.9	12	2	3.5	.7
18...	0920	1050	35	6.6	8.8	17	1	11.8	11	1	3.4	.6
JUN												
08...	0935	860	35	7.5	13.3	13	3	11.1	14	4	4.5	.7
22...	0950	250	47	7.2	14.8	25	2	10.5	15	0	4.4	.9
JUL												
13...	1010	120	55	7.3	14.7	13	3	10.3	20	3	6.2	1.2
27...	1050	83	60	7.4	19.2	17	2	10.2	23	4	6.7	1.5
AUG												
10...	0930	55	70	7.4	20.8	13	2	9.0	--	--	--	--
24...	0935	130	68	7.0	15.9	25	2	10.0	24	5	7.6	1.2
SEP												
14...	1000	90	56	7.0	14.7	21	1	9.9	18	2	5.6	1.1
28...	0950	500	42	6.8	11.7	42	2	11.0	13	2	3.9	.8

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	CARBON DIOXIDE (CO2) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)
OCT											
05...	3.3	.4	26	0	21	1.7	3.9	2.7	.01	.03	.01
19...	3.3	.3	31	0	25	2.0	4.1	3.1	.00	.02	.01
NOV											
03...	2.0	.3	20	0	16	1.6	3.3	2.0	1.0	.12	.02
17...	2.3	.3	21	0	17	2.1	4.1	2.3	.09	.02	.01
DEC											
08...	2.9	.2	23	0	19	1.5	3.2	2.4	.19	.03	.01
15...	2.3	.2	19	0	16	1.5	3.6	2.0	.33	.05	.00
JAN											
05...	2.1	.2	15	0	12	1.2	4.5	1.0	.42	.02	.01
19...	1.8	.2	14	0	11	1.8	4.7	1.3	.39	.06	.01
FEB											
09...	2.3	.2	17	0	14	.7	5.3	1.7	.27	.02	.01
16...	2.1	.2	15	0	12	1.2	3.9	1.0	.27	.03	.01
MAR											
09...	1.7	.2	9	0	7	1.1	6.6	1.6	.60	.03	.02
23...	1.7	.2	10	0	8	.8	2.0	1.6	.31	.07	.01
APR											
06...	1.3	.2	9	0	7	1.1	2.9	1.4	.17	.03	.01
20...	1.8	.2	14	0	11	1.4	1.9	1.6	.19	.04	.01
MAY											
04...	1.7	.2	12	0	10	1.5	3.5	1.4	.37	.06	.02
18...	1.8	.2	12	0	10	4.8	2.0	1.4	.28	.03	.01
JUN											
08...	1.9	.1	13	0	11	.7	5.6	1.4	.20	.05	.01
22...	2.6	.2	18	0	15	1.8	1.4	1.0	.10	.02	.01
JUL											
13...	2.8	.2	21	0	17	1.7	2.0	2.3	.08	.04	.01
27...	3.1	.2	23	0	19	1.5	4.9	2.0	.09	.05	.01
AUG											
10...	--	--	--	--	--	--	--	--	--	--	--
24...	3.4	.2	23	0	19	3.7	3.2	3.1	.13	.04	.01
SEP											
14...	2.6	.2	20	0	16	3.2	2.8	2.7	.09	.02	.00
28...	2.0	.2	14	0	11	3.6	1.7	1.0	.32	.03	.01

14222550 EAST FORK LEWIS RIVER NEAR DOLLAR CORNER, WA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED SILVER (AG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT											
05...	.00	--	--	--	0	1	4	.0	--	--	10
19...	.01	--	--	--	0	0	6	.0	--	--	10
NOV											
03...	.00	--	--	--	0	0	2	.0	--	--	10
17...	.00	--	--	--	0	0	9	.0	--	--	10
DEC											
08...	.00	--	--	--	0	7	17	.1	--	--	20
15...	.00	--	--	--	0	0	3	.0	--	--	10
JAN											
05...	.00	--	--	--	0	1	10	.0	--	--	10
19...	.00	--	--	--	0	0	7	.2	--	--	0
FEB											
09...	.00	--	--	--	0	0	3	.1	--	--	10
16...	.01	--	--	--	0	0	10	.1	--	--	0
MAR											
09...	.00	--	--	--	0	0	4	.1	--	--	0
23...	.01	--	--	--	10	3	14	.0	--	--	30
APR											
06...	.00	--	--	--	0	0	4	.0	--	--	0
20...	.00	--	--	--	0	0	15	.0	--	--	0
MAY											
04...	.01	--	--	--	0	1	16	.0	--	--	3
18...	.00	--	--	--	0	1	2	.1	--	--	0
JUN											
08...	.00	--	--	--	0	1	5	.0	--	--	0
22...	.00	--	--	--	0	0	6	.0	--	--	0
JUL											
13...	.00	--	--	--	0	3	6	.0	--	--	0
27...	.00	--	--	--	0	0	9	.1	--	--	0
AUG											
10...	--	--	--	--	--	--	--	--	--	--	--
24...	.00	--	--	--	0	1	5	.0	--	--	0
SEP											
14...	.00	--	--	--	0	1	1	.0	--	--	0
28...	.00	0	0	0	0	0	5	.0	0	0	0

14223600 KALAMA RIVER ABOVE SPENCER CREEK, NEAR KALAMA, WA

LOCATION.--Lat 46°02'51", long 122°50'11", in SE¼SW¼ sec.32, T.7 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank at Modrow Road bridge, 0.6 mi (1.0 km) upstream from Spencer Creek, 2.1 mi (3.4 km) north of Kalama city limits, and at mile 2.8 (4.5 km).

DRAINAGE AREA.--202 mi² (325 km²), approximately.

PERIOD OF RECORD.--Water years 1970 to current year (see REMARKS).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May to November 1970, July 1971 to current year (see REMARKS).

INSTRUMENTATION.--Water temperature recorder since May 1970.

REMARKS.--Temperature records collected at this site prior to October 1973 are published in Water Resources Data for Oregon, Part 2. October 1972 to September 1973, published as 14223510 "below Cedar Creek."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Aug. 12, 1977; minimum, 0.0°C Dec. 7-13, 1972, Jan. 9, 1973, Feb. 6, 1977.

EXTREMES FOR CURRENT YEAR:
WATER TEMPERATURES: Maximum, 21.5°C Aug. 12; minimum, 0.0°C Feb. 6-10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	*TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT												
05...	0830	236	61	7.3	10.2	--	1	10.3	.07	.06	.02	.02
19...	0750	210	70	7.6	8.6	8	3	11.1	.01	.06	.03	.01
NOV												
02...	1550	560	50	7.6	10.1	30	6	11.2	.17	.05	.02	.00
16...	1515	620	60	7.0	9.8	21	5	11.5	.04	.06	.02	.01
DEC												
07...	1555	206	65	7.6	6.3	13	2	12.7	.00	.04	.02	.00
14...	1645	366	55	7.5	6.0	13	2	12.7	.10	.04	.02	.00
JAN												
04...	1600	610	60	7.6	3.0	7	2	13.5	.21	.06	.02	.01
18...	1600	620	56	6.8	7.0	8	5	12.1	.16	.05	.02	.01
FEB												
08...	1650	296	56	7.0	5.0	17	1	12.7	.10	.07	.02	.00
15...	1545	440	55	7.6	6.7	21	7	12.0	.13	.06	.02	.01
MAR												
09...	1730	3300	46	7.6	6.1	25	15	12.0	.50	.05	.06	.01
22...	1545	1000	40	7.5	8.6	13	2	12.2	.31	.00	.02	.01
APR												
05...	1530	1270	46	7.3	9.6	8	2	11.5	.10	.03	.01	.00
16...	1545	734	52	7.5	9.6	17	2	12.0	.16	.06	.01	.01
MAY												
03...	1540	1220	48	7.1	9.0	25	5	11.0	.15	.04	.03	.01
17...	1615	1060	50	7.0	10.2	25	12	11.7	.47	.05	.03	.00
JUN												
07...	1600	1070	42	7.9	15.5	13	2	11.1	.17	.03	.02	.00
21...	1600	505	56	7.6	13.7	13	3	11.5	.07	.03	.02	.00
JUL												
12...	1630	304	60	7.9	16.7	13	1	11.0	.03	.06	.02	.01
26...	1000	242	65	7.3	10.1	13	2	10.0	.05	.05	.02	.00
AUG												
10...	0645	205	69	7.1	17.6	13	3	9.8	--	--	--	--
24...	1705	348	70	7.0	16.0	60	9	10.1	.22	.08	.05	.01
SEP												
13...	1640	276	50	7.7	15.1	13	2	10.0	.06	.04	.02	.01
27...	1640	833	50	6.9	11.7	17	5	11.3	.25	.07	.02	.00

* Temperatures taken at water surface.

14223600 KALAMA RIVER ABOVE SPENCER CREEK, NEAR KALAMA, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.0	12.0	9.5	9.0	2.5	2.0	3.0	2.0	6.5	4.0	5.5	4.5
2	12.5	11.0	9.5	8.5	2.5	2.0	3.5	3.0	5.5	4.5	5.0	5.0
3	11.0	10.5	9.0	8.5	3.5	2.5	3.0	2.5	6.5	3.0	5.5	5.0
4	11.0	9.5	9.0	7.5	4.0	3.5	3.0	2.0	6.0	3.5	6.0	5.0
5	11.0	10.0	8.5	7.5	4.5	4.0	2.5	1.0	6.5	3.5	6.0	5.0
6	11.5	10.0	8.5	8.0	5.0	4.5	1.0	.0	5.5	4.5	6.5	5.0
7	11.5	10.5	9.0	7.5	6.0	5.5	.5	.0	5.0	4.0	5.5	5.0
8	12.0	10.5	9.5	8.5	6.5	6.0	.0	.0	5.0	4.5	5.5	5.0
9	11.5	10.0	9.0	9.0	6.0	5.5	.0	.0	5.5	4.5	5.5	5.0
10	11.5	11.0	9.0	7.5	6.5	5.0	1.0	.0	6.5	5.5	6.0	5.0
11	12.0	11.0	8.5	7.5	5.0	5.0	2.5	1.5	6.5	6.0	6.5	5.0
12	11.5	11.0	8.0	7.0	5.0	4.0	4.0	3.0	7.5	6.0	6.5	5.0
13	10.5	9.5	7.0	5.5	5.0	4.0	4.5	3.5	7.5	6.0	5.5	5.0
14	10.5	9.5	7.5	5.5	6.0	4.5	5.0	4.0	6.5	5.0	5.5	4.5
15	10.5	9.0	8.5	7.5	7.0	6.0	5.5	5.0	6.0	4.5	6.0	4.5
16	9.5	8.5	9.5	8.5	7.0	6.5	6.0	5.0	7.0	5.0	5.5	5.5
17	9.0	7.5	9.5	9.0	6.5	5.0	6.5	5.5	7.5	6.0	6.0	5.0
18	8.0	7.0	9.0	7.0	6.0	5.5	7.0	6.0	7.0	6.0	6.5	5.5
19	7.5	6.0	7.0	5.5	5.5	4.5	7.0	5.5	7.0	5.0	7.0	5.5
20	7.5	6.0	7.0	5.0	4.5	3.5	6.5	5.0	7.0	6.5	6.0	5.5
21	7.5	5.5	7.0	5.5	4.0	3.5	6.0	5.5	7.0	6.0	7.5	5.5
22	8.0	7.0	6.5	5.0	4.5	3.5	5.0	4.0	6.5	5.0	8.0	7.0
23	8.5	7.5	6.0	5.0	5.0	4.5	4.0	3.0	5.5	4.5	8.0	7.0
24	8.5	7.5	6.0	4.5	5.0	4.5	3.0	2.0	5.5	4.5	7.5	5.5
25	9.0	8.0	6.5	5.5	5.0	4.5	2.5	2.0	5.0	4.5	6.5	6.0
26	8.5	8.5	6.0	4.5	6.5	5.5	2.5	1.5	5.0	4.5	6.5	6.0
27	9.0	8.5	4.0	2.5	6.5	6.0	2.0	1.0	6.5	5.0	6.5	5.0
28	8.5	7.5	2.5	1.5	6.0	5.0	2.0	1.5	6.5	5.0	6.5	5.0
29	9.0	7.5	2.0	1.5	5.5	5.0	2.0	1.5	---	---	6.5	5.5
30	7.5	7.0	2.5	2.0	5.0	4.0	2.5	1.5	---	---	7.5	5.5
31	9.0	7.5	---	---	4.0	3.0	4.0	2.5	---	---	8.0	6.0
MONTH	13.0	5.5	9.5	1.5	7.0	2.0	7.0	.0	7.5	3.0	8.0	4.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.5	6.0	11.0	10.0	10.5	9.0	17.0	15.0	20.0	17.5	15.5	11.5
2	7.5	6.0	10.0	9.5	10.0	8.0	16.0	14.0	20.5	18.0	14.0	12.5
3	8.0	6.0	9.5	8.5	10.0	9.0	15.0	13.0	20.5	18.0	13.5	12.5
4	9.0	7.5	8.0	7.0	10.0	9.0	13.5	11.0	20.0	18.0	14.0	13.0
5	9.5	6.0	8.0	6.5	13.0	9.5	13.0	11.0	21.0	18.0	14.5	13.0
6	10.0	6.0	9.0	7.0	13.0	12.5	15.5	12.0	20.5	18.5	14.5	12.5
7	10.0	7.5	9.5	8.0	14.0	12.5	17.0	13.0	20.5	18.5	14.5	11.5
8	10.0	7.5	10.0	8.0	13.5	11.5	16.5	14.5	20.5	18.0	14.0	11.0
9	7.5	6.0	11.0	9.0	13.0	11.0	16.0	14.5	21.0	18.0	14.0	11.0
10	7.0	6.0	10.5	8.5	13.5	11.0	15.5	13.0	20.5	17.5	14.0	11.0
11	9.0	7.0	9.5	7.5	12.5	11.0	15.0	14.0	21.0	17.5	14.0	12.0
12	8.5	7.5	10.0	7.5	14.0	10.5	15.0	13.5	21.5	18.0	14.0	12.5
13	9.0	7.5	10.5	9.0	14.0	12.0	16.0	12.5	21.0	18.5	14.5	12.5
14	7.5	6.0	10.0	9.0	15.0	12.5	16.0	12.5	20.0	18.0	14.0	13.5
15	8.0	7.5	10.0	8.5	15.0	12.5	17.0	15.0	20.5	17.0	13.5	12.5
16	8.0	7.0	9.0	8.0	16.5	13.0	17.5	16.0	20.5	17.5	13.0	12.0
17	8.0	6.0	9.0	8.0	17.5	13.0	16.5	15.0	21.0	18.0	12.5	11.5
18	8.0	6.0	9.0	8.0	16.0	14.0	15.0	14.0	19.0	17.5	12.0	11.5
19	8.5	6.0	10.5	8.0	15.5	12.5	16.5	13.0	18.0	16.5	12.5	11.5
20	9.0	6.5	10.5	9.5	14.5	13.0	16.5	14.5	17.0	16.5	12.5	11.5
21	9.5	7.0	11.5	9.5	13.5	12.0	17.5	15.0	16.5	15.5	12.0	11.0
22	11.0	7.5	11.5	9.5	16.0	12.5	18.5	15.5	17.0	15.0	12.0	10.5
23	11.0	9.5	10.5	9.5	17.0	13.5	18.5	16.0	15.5	14.0	11.0	10.0
24	11.0	9.5	10.0	9.0	17.5	13.5	19.0	16.5	14.5	13.0	11.0	10.5
25	11.0	9.5	11.0	8.5	18.0	14.5	18.0	16.0	14.0	13.5	10.5	10.0
26	10.0	9.0	10.5	9.5	17.0	16.5	17.5	15.5	14.0	13.0	11.0	10.0
27	10.5	8.0	9.5	8.5	16.5	16.0	18.5	15.5	13.5	12.5	10.5	10.0
28	11.5	9.0	9.0	8.0	17.5	16.0	17.5	16.0	14.5	13.5	11.0	10.5
29	11.5	9.5	9.0	7.5	17.5	16.0	18.0	15.5	13.5	12.5	11.0	10.5
30	12.5	10.0	9.0	8.0	18.0	16.0	18.5	15.5	13.5	12.0	11.0	10.0
31	---	---	9.5	8.0	---	---	19.5	16.5	14.5	12.5	---	---
MONTH	12.5	6.0	11.5	6.5	18.0	8.0	19.5	11.0	21.5	12.0	15.5	10.0
YEAR	21.5	.0										

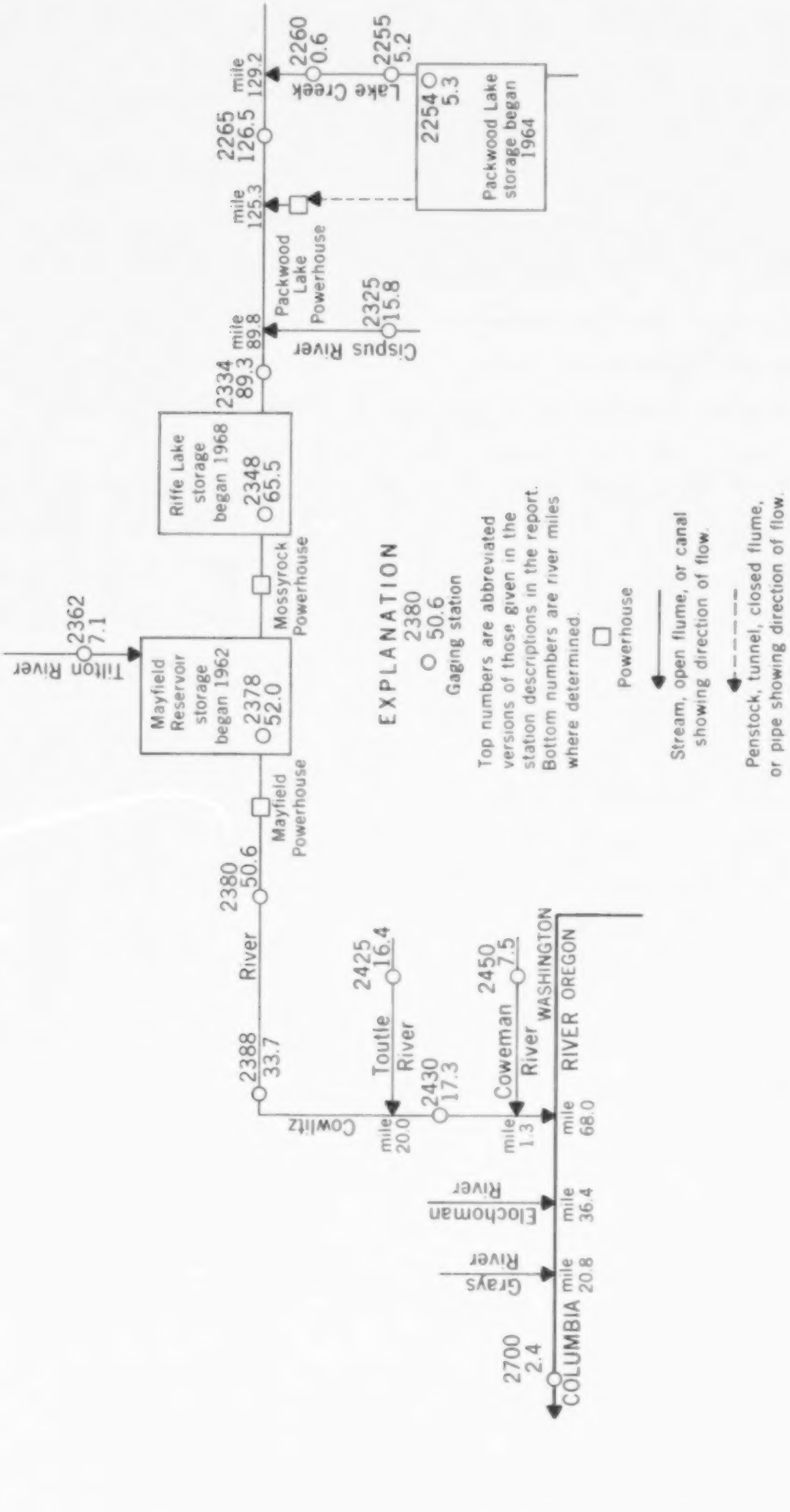
2700
2.4
COLUMBIA
Grays River
mile 20.8
Elochoman River
mile 36.4
mile 68.0
RIVER OREGON
WASHINGTON
Coweman River
2450
7.5
mile 1.3
2430
17.3
Toutle River
2425
16.4
mile 20.0
Cowlitz
2388
33.7
River
2380
50.6
Mayfield Powerhouse
Mayfield Reservoir storage began 1962
2378
52.0
Tilton River
2362
7.1
Mossyrock Powerhouse
Riffe Lake storage began 1968
2348
65.5
2334
89.3
mile 89.8
Cispus River
2325
15.8
Packwood Lake Powerhouse
mile 125.3
2265
126.5
Packwood Lake storage began 1964
2254
5.3
Lake Creek
mile 129.2
2260
0.6
2255
5.2
EXPLANATION
2380
50.6
Gaging station
Top numbers are abbreviated versions of those given in the report station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 21. Gaging stations in Cowlitz River basin and downstream to mouth of Columbia River.

14225400 PACKWOOD LAKE NEAR PACKWOOD, WA

LOCATION.--Lat 46°35'47", long 121°34'07", in SW¼ sec.21, T.13 N., R.10 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, at lake outlet 4.9 mi (7.9 km) east of Packwood and at mile 5.3 (8.5 km).

DRAINAGE AREA.--19.2 mi² (49.7 km²).

PERIOD OF RECORD.--August 1959 to current year. Chemical analyses September 1969 to October 1970.

REVISED RECORDS.--WSP 1935: 1959-60, drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by Washington Public Power Supply System from Corps of Engineers bench mark). Prior to Sept. 23, 1964, at site on north side of lake 1,500 ft (457 m) east of outlet at same datum.

REMARKS.--Reservoir is formed by low concrete dam at lake outlet completed during October 1963. Draft from the lake for continuous power generation began June 1, 1964. Regulation of lake elevations between 2,850.5 ft (868.83 m) and 2,858.5 ft (871.27 m) is allowed by stipulation of Federal Power Commission. Elevation of lake maintained between 2,856.5 ft (870.66 m) and 2,857.5 ft (870.97 m) during the summer season for forestry and fisheries protection and retention of natural scenic effect. No regulation or diversion above lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 2,860.81 ft (871.97 m) Dec. 4, 1975; minimum, 2,850.50 ft (868.832 m) Oct. 4, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 2,858.47 ft (871.262 m) Aug. 16; minimum, 2,850.86 ft (868.942 m) Dec. 6.

ELEVATION, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2850.94	2855.27	2852.67	2852.06	2854.79	2854.45	2853.97	2856.67	2856.94	2856.68	2856.67	2856.71
2	2851.12	2855.40	2852.36	2852.01	2854.71	2854.42	2854.03	2856.64	2856.95	2856.68	2856.69	2856.63
3	2851.27	2855.48	2852.00	2851.95	2854.63	2854.42	2854.07	2856.65	2856.95	2856.59	2856.71	2856.68
4	2851.38	2855.55	2851.64	2851.93	2854.58	2854.37	2854.09	2856.70	2857.14	2856.48	2856.74	2856.89
5	2851.48	2855.60	2851.26	2851.92	2854.54	2854.32	2854.13	2856.66	2857.34	2856.48	2856.80	2857.17
6	2851.58	2855.65	2850.91	2851.92	2854.52	2854.27	2854.24	2856.67	2857.64	2856.53	2856.94	2857.13
7	2851.67	2855.69	2851.07	2851.92	2854.47	2854.28	2854.52	2856.68	2858.02	2856.58	2856.97	2857.00
8	2851.79	2855.73	2851.26	2851.91	2854.40	2854.34	2854.92	2856.71	2858.24	2856.64	2856.96	2856.85
9	2851.92	2855.85	2851.38	2851.90	2854.35	2854.37	2855.27	2856.73	2858.02	2856.71	2856.93	2856.71
10	2852.08	2855.97	2851.39	2851.88	2854.35	2854.36	2855.57	2856.77	2857.72	2856.75	2856.92	2856.62
11	2852.25	2856.10	2851.34	2851.89	2854.36	2854.30	2855.84	2856.70	2857.44	2856.80	2857.14	2856.56
12	2852.34	2856.23	2851.29	2851.98	2854.35	2854.27	2856.08	2856.68	2857.20	2856.86	2857.42	2856.51
13	2852.43	2856.29	2851.29	2852.09	2854.38	2854.23	2856.36	2856.69	2857.01	2856.82	2857.69	2856.49
14	2852.50	2856.31	2851.30	2852.19	2854.37	2854.17	2856.56	2856.70	2856.81	2856.75	2857.95	2856.46
15	2852.57	2856.39	2851.31	2852.31	2854.49	2854.11	2856.52	2856.70	2856.65	2856.72	2858.20	2856.42
16	2852.63	2856.58	2851.32	2852.47	2854.64	2854.03	2856.48	2856.67	2856.59	2856.72	2858.41	2856.32
17	2852.69	2856.76	2851.35	2852.74	2854.79	2853.96	2856.41	2856.62	2856.58	2856.78	2858.22	2855.96
18	2852.76	2856.78	2851.39	2853.06	2854.79	2853.93	2856.33	2856.57	2856.57	2856.84	2857.89	2855.60
19	2852.85	2856.58	2851.38	2853.42	2854.73	2853.92	2856.27	2856.55	2856.56	2856.77	2857.60	2855.25
20	2852.98	2856.34	2851.37	2853.63	2854.68	2853.88	2856.23	2856.55	2856.52	2856.69	2857.34	2854.89
21	2853.10	2856.10	2851.38	2853.81	2854.63	2853.83	2856.23	2856.63	2856.55	2856.67	2857.14	2854.57
22	2853.22	2855.86	2851.38	2853.99	2854.62	2853.79	2856.25	2856.71	2856.74	2856.70	2856.93	2854.15
23	2853.34	2855.60	2851.43	2854.16	2854.58	2853.75	2856.30	2856.72	2856.81	2856.74	2856.72	2853.74
24	2853.48	2855.19	2851.45	2854.33	2854.51	2853.73	2856.42	2856.64	2856.54	2856.80	2856.73	2853.42
25	2853.86	2854.85	2851.68	2854.49	2854.46	2853.68	2856.79	2856.58	2856.70	2856.88	2856.74	2853.06
26	2854.17	2854.48	2851.62	2854.64	2854.45	2853.69	2857.09	2856.62	2856.76	2856.91	2856.79	2852.67
27	2854.32	2854.05	2851.83	2854.79	2854.43	2853.92	2857.07	2856.58	2856.71	2856.93	2856.72	2852.23
28	2854.45	2853.64	2851.91	2854.91	2854.44	2853.95	2856.82	2856.52	2856.65	2856.93	2856.69	2851.87
29	2854.59	2853.33	2851.96	2854.92	---	2853.93	2856.77	2856.43	2856.71	2856.86	2857.03	2851.50
30	2854.71	2852.96	2852.01	2854.69	---	2853.89	2856.75	2856.41	2856.70	2856.78	2857.17	2851.16
31	2854.91	---	2852.04	2854.85	---	2853.89	---	2856.58	---	2856.71	2856.90	---
MEAN	2852.75	2855.55	2851.54	2853.06	2854.54	2854.08	2855.81	2856.64	2856.99	2856.73	2857.15	2855.24
MAX	2854.91	2856.78	2852.67	2854.92	2854.79	2854.45	2857.09	2856.77	2858.24	2856.93	2858.41	2857.17
MIN	2850.94	2852.96	2850.91	2851.88	2854.35	2853.68	2853.97	2856.41	2856.52	2856.48	2856.67	2851.16

CAL YR 1976 MEAN 2854.40 MAX 2858.02 MIN 2850.62
WTR YR 1977 MEAN 2855.00 MAX 2858.41 MIN 2850.91

14225500 LAKE CREEK NEAR PACKWOOD, WA

LOCATION.--Lat 46°35'47", long 121°34'08", in SW¼ sec.21, T.13 N., R.10 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 500 ft (152 m) downstream from outlet of Packwood Lake, 4.8 mi (7.7 km) east of Packwood and at mile 5.2 (8.4 km).

DRAINAGE AREA.--19.2 mi² (49.7 km²).

PERIOD OF RECORD.--September 1911 to September 1924 (published as "at outlet of Packwood Lake, near Lewis"), September 1930 to October 1942, October 1949 to May 1954, August 1959 to current year.

REVISED RECORDS.--WSP 594: 1912. WSP 1318: 1931. WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,844.62 ft (867.040 m) above mean sea level (levels by Washington Public Power Supply System from Corps of Engineers bench mark). Prior to Aug. 3, 1918, nonrecording gages at several sites at or within 100 ft (30 m) of present site at various datums. Aug. 3, 1918, to Sept. 30, 1924, water-stage recorder at site 110 ft (34 m) upstream at different datum.

REMARKS.--Records fair. Since June 1, 1964, flow regulated by continuous operation of the powerplant which controls and diverts the outflow of the lake. Water diverted for power generation is not returned to Lake Creek.

AVERAGE DISCHARGE.--33 years (water years 1912-24, 1931-42, 1950-53, 1960-63), 101 ft³/s (2.86 m³/s), 71.44 in/yr (1,815 mm/yr), 73,120 acre-ft/yr (90.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,400 ft³/s (39.6 m³/s) Dec. 22, 1933, gage height, 5.9 ft (1.80 m); probably no flow at times during October 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, estimated by observer, 6.0 ft (1.83 m) Dec. 18, 1917, datum then in use (discharge not determined).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35 ft³/s (0.99 m³/s) Nov. 7, 8, gage height, 1.98 ft (0.604 m); minimum, 1.6 ft³/s (0.045 m³/s) Feb. 2, gage height, 1.02 ft (0.311 m); minimum daily, 2.8 ft³/s (0.079 m³/s) Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	33	6.0	6.0	5.5	3.8	4.0	3.8	3.5	3.8	4.4	4.2
2	22	33	5.5	6.0	4.7	3.8	4.0	3.3	3.5	3.8	4.4	4.2
3	22	34	5.1	6.0	3.8	3.8	4.0	4.2	3.5	3.8	4.4	4.2
4	23	34	4.9	6.0	3.8	3.7	4.2	5.8	3.5	3.7	4.4	4.4
5	24	34	4.0	5.6	3.8	3.7	4.2	5.8	3.3	3.5	4.4	4.4
6	24	34	4.4	4.9	3.8	3.7	4.2	6.0	3.5	3.5	4.4	4.4
7	18	34	5.1	4.9	3.7	3.7	4.2	6.0	4.4	3.5	4.4	4.4
8	13	28	5.3	4.9	3.7	3.7	4.7	6.0	4.2	3.3	4.4	4.4
9	13	13	5.1	4.9	3.5	3.7	4.7	6.0	4.2	3.0	4.4	4.4
10	14	12	5.1	4.7	3.7	3.7	4.7	6.0	4.2	3.3	4.4	4.4
11	21	10	5.1	4.7	3.5	3.7	4.9	5.8	4.2	3.7	4.4	4.4
12	24	6.2	5.1	4.7	3.5	3.7	4.9	5.8	4.0	4.4	4.7	4.4
13	25	21	5.1	4.7	3.5	3.7	5.1	5.8	4.0	4.4	4.7	4.4
14	25	29	5.1	4.9	3.5	3.7	4.4	5.8	3.8	4.2	4.9	4.4
15	25	17	5.1	4.9	3.5	3.5	3.5	5.8	4.0	4.2	4.9	4.4
16	25	8.0	5.1	5.1	3.7	3.5	3.5	5.8	4.0	4.4	4.9	4.4
17	25	9.2	5.1	5.1	3.7	3.5	3.5	5.8	3.8	4.4	4.9	4.2
18	17	9.0	5.1	5.3	3.7	3.5	3.3	5.8	3.7	4.2	4.7	4.0
19	8.7	8.7	5.1	5.5	3.7	3.5	3.7	5.8	3.7	4.2	4.7	4.0
20	8.7	8.7	5.1	5.3	3.7	3.5	4.0	5.8	3.8	4.2	4.7	4.0
21	8.7	8.4	5.1	5.1	3.7	3.3	4.0	5.8	4.0	4.2	4.4	3.7
22	8.7	8.4	5.1	5.1	3.5	3.3	4.0	5.8	4.2	4.2	4.4	3.5
23	8.7	8.2	5.3	5.3	3.7	3.7	4.0	5.8	4.0	4.2	4.4	3.5
24	8.7	8.0	5.3	5.3	4.0	4.2	4.0	5.8	4.0	4.4	4.4	3.3
25	9.2	7.7	5.3	5.3	4.0	4.0	3.8	5.8	4.0	4.4	4.4	3.0
26	9.5	7.4	5.5	5.5	4.0	4.2	3.8	5.8	4.0	4.4	4.4	2.8
27	9.5	7.2	5.5	5.5	4.0	4.2	3.8	5.8	3.8	4.4	4.4	3.3
28	9.8	7.0	6.0	5.5	3.8	4.0	3.8	5.8	3.7	4.4	4.2	4.4
29	9.8	6.7	6.0	5.5	---	4.0	3.8	5.8	3.8	4.4	4.4	3.5
30	9.8	6.4	6.0	5.5	---	4.0	3.8	5.8	3.8	4.4	4.4	3.3
31	16	---	6.0	5.5	---	4.0	---	4.9	---	4.4	4.4	---
TOTAL	507.8	491.2	162.6	163.2	106.7	116.0	122.5	173.8	116.1	125.3	139.7	120.3
MEAN	16.4	16.4	5.25	5.26	3.81	3.74	4.08	5.61	3.87	4.04	4.51	4.01
MAX	25	34	6.0	6.0	5.5	4.2	5.1	6.0	4.4	4.4	4.9	4.4
MIN	8.7	6.2	4.0	4.7	3.5	3.3	3.3	3.3	3.3	3.0	4.2	2.8
AC-FT	1010	974	323	324	212	230	243	345	230	249	277	239

CAL YR 1976 TOTAL 2658.4 MEAN 7.26 MAX 34 MIN 2.0 AC-FT 5270
WTR YR 1977 TOTAL 2345.2 MEAN 6.43 MAX 34 MIN 2.8 AC-FT 4650

14226000 LAKE CREEK AT MOUTH, NEAR PACKWOOD, WA

LOCATION.--Lat 46°37'48", long 121°38'12", in NE¼SE¼ sec.11, T.13 N., R.9 E., Lewis County, Hydrologic Unit 17080004, on right bank 0.2 mi (0.3 km) upstream from bridge on State Highway 14, 2.3 mi (3.7 km) northeast of Packwood and at mile 0.6 (1.0 km).

DRAINAGE AREA.--26.5 mi² (68.6 km²).

PERIOD OF RECORD.--August 1907 to September 1915 (published as "at mouth, near Lewis"), August 1962 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1318: 1911. WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,190 ft (363 m), from topographic map. Aug. 21, 1907, to Jan. 22, 1913, and Mar. 11, 1913, to Sept. 30, 1915, nonrecording gage at site 0.4 mi (0.6 km) downstream at different datum. Aug. 1, 1962, to Aug. 4, 1964, at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good except those for period of no gage-height record, Aug. 8 to Sept. 20, which are fair. Since June 1, 1964, flow regulated by continuous operation of the powerplant which controls and diverts the outflow of Packwood Lake. Water diverted for power generation is not returned to Lake Creek.

AVERAGE DISCHARGE.--9 years (water years 1908-15, 1963), 120 ft³/s (3.398 m³/s), 61.49 in/yr (1,562 mm/yr), 86,880 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,470 ft³/s (41.6 m³/s) Dec. 4, 1975, gage height, 5.61 ft (1.710 m); minimum daily, 5 ft³/s (0.14 m³/s) estimated Oct. 10, 19, 1963, caused by regulation during construction of intake structure at Packwood Lake.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 57 ft³/s (1.61 m³/s) Mar. 27, gage height, 2.02 ft (0.616 m); minimum daily, 11 ft³/s (0.31 m³/s) Aug. 17-21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	47	17	21	19	23	34	26	24	17	14	16
2	29	45	17	20	19	23	32	25	23	17	14	15
3	30	44	17	20	17	24	32	26	24	17	13	20
4	31	43	16	19	17	23	38	27	28	17	13	30
5	31	43	16	19	17	22	44	27	28	17	13	28
6	31	43	15	18	17	23	37	27	28	16	13	24
7	29	43	15	18	17	24	30	27	27	16	13	21
8	20	40	15	18	16	27	29	27	26	16	13	19
9	20	21	16	18	16	32	29	27	25	16	12	17
10	21	21	16	18	18	30	27	27	24	16	12	16
11	26	19	16	18	18	28	26	26	23	16	12	15
12	31	15	16	18	18	29	25	26	23	16	12	14
13	32	25	16	18	18	27	24	26	22	16	12	13
14	32	41	16	18	18	26	23	26	22	16	12	13
15	32	35	16	19	17	25	23	26	22	16	12	13
16	32	22	16	21	17	24	22	25	21	16	12	12
17	32	25	16	27	17	24	22	25	21	16	11	12
18	28	25	16	27	17	23	22	25	20	16	11	12
19	15	23	16	27	17	23	22	24	20	15	11	13
20	15	22	16	26	16	23	22	24	20	15	11	15
21	15	22	16	24	17	22	22	24	20	15	11	16
22	15	21	16	23	17	23	21	24	19	15	12	14
23	15	21	17	23	17	24	21	25	19	15	12	14
24	16	21	16	22	17	26	22	24	19	14	16	15
25	24	20	18	22	17	25	24	23	19	14	15	16
26	19	19	24	21	17	29	25	24	18	14	14	15
27	18	19	29	21	19	51	26	24	18	14	13	14
28	17	18	25	21	22	42	26	24	18	14	13	15
29	17	18	23	20	---	36	26	23	18	14	16	14
30	17	18	22	20	---	32	26	23	17	14	23	14
31	25	---	21	20	---	35	---	25	---	14	18	---
TOTAL	743	839	547	645	489	848	802	782	656	480	409	485
MEAN	24.0	28.0	17.6	20.8	17.5	27.4	26.7	25.2	21.9	15.5	13.2	16.2
MAX	32	47	29	27	22	51	44	27	28	17	23	30
MIN	15	15	15	18	16	22	21	23	17	14	11	12
AC-FT	1470	1660	1080	1280	970	1680	1590	1550	1300	952	811	962

CAL YR 1976 TOTAL 11988 MEAN 32.8 MAX 223 MIN 15 AC-FT 23780
WTR YR 1977 TOTAL 7725 MEAN 21.2 MAX 51 MIN 11 AC-FT 15320

14226500 COWLITZ RIVER AT PACKWOOD, WA

LOCATION.--Lat 46°36'47", long 121°40'41", in SE¼SE¼ sec.16, T.13 N., R.9 E., Lewis County, Hydrologic Unit 1780004, on right bank 8 ft (2.4 m), upstream from Forest Service bridge, 0.6 mi (1.0 km) northwest of Packwood, 0.8 mi (1.3 km) upstream from Skate Creek, and at mile 126.5 (203.5 km).

DRAINAGE AREA.--287 mi^2 (743 km^2).

PERIOD OF RECORD.-July 1911 to December 1919, September 1929 to current year. Published as "at Lewis" 1911-19, water temperatures, November 1970 to April 1971.

REVISED RECORDS.--WSP 884: 1938. WSP 1348: 1916-18(M), 1934. WSP 1638: 1947(P).

GAGE.--Water-stage recorder. Datum of gage is 1,048.0 ft (319.43 m) above mean sea level (Bureau of Public Roads bench mark). July 1, 1911, to Dec. 31, 1919, nonrecording gages at site about 1 mi (1.6 km) upstream at different datums. Sept. 30, 1929, to Jan. 1, 1930, nonrecording gage at present site and datum.

REMARKS.--Records good except those less than 500 ft^3/s (14.2 m^3/s) and those for period of shifting control July 1 to Sept. 30, which are fair. Minor regulation by Packwood Lake (see sta 14225400) beginning June 1964. Small diversions for domestic use. Water is diverted from Packwood Lake for power generation and is discharges into Cowlitz River about 1 mi (1.6 km) downstream from this station, monthly mean diversion, in cubic feet per second, for the current water year as furnished by the Washington Power Supply System, is as follows:

October..........	0	January..........	17.2	April..........	57.0	July	71.1
November..........	49.3	February..........	41.8	May............	97.3	August.......	73.2
December.........	40.0	March............	43.3	June...........	163	September....	105

AVERAGE DISCHARGE.--56 years,(water years 1912-19, 1930-77), 1,641 ft^3/s (46.47 m^3/s), 1,189,000 acre-ft/yr (1,470 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft^3/s (1,020 m^3/s) Dec. 21, 1933, gage height, 13.0 ft (3.96 m), from rating curve extended above 20,000 ft^3/s (566 m^3/s); maximum gage height, 13.54 ft (4.127 m) Nov. 23, 1959; minimum discharge, 130 cfs (3.68 m^3/s) Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,500 ft^3/s (212 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 18	1445	*5,840	165	*6.17	1.881

Minimum daily discharge, 290 ft^3/s (8.21 m^3/s) Oct. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	606	1230	410	662	480	784	809	2530	3210	888	642	654
2	570	779	390	628	460	746	785	2810	2430	825	666	612
3	510	660	370	580	440	731	766	2760	2040	666	684	916
4	460	600	355	540	420	684	865	2150	3560	606	714	2530
5	420	530	350	500	400	654	1220	1710	3400	570	714	1970
6	400	480	365	470	380	669	1790	1440	3860	558	654	1150
7	390	500	400	450	370	743	2460	1340	3980	546	606	962
8	390	648	480	440	360	890	3020	1380	3340	576	636	783
9	400	550	460	420	350	987	2420	1400	2250	600	648	678
10	410	480	440	400	600	885	1870	1640	2140	564	666	648
11	430	430	420	395	720	798	1570	1540	2080	612	684	636
12	410	410	410	410	1290	787	1400	1340	1900	666	741	624
13	410	390	390	395	1490	723	1440	1310	2060	582	734	618
14	390	370	380	400	1090	688	1290	1350	1980	588	702	588
15	370	400	400	420	932	651	1200	1230	1850	624	684	450
16	350	1250	430	500	859	629	1170	1140	1640	648	666	380
17	340	1360	450	1690	828	610	1060	1060	1720	642	696	360
18	325	1220	450	3830	804	600	982	1060	1800	582	720	340
19	310	894	430	2820	740	590	897	1060	1730	558	708	445
20	305	738	420	1840	713	580	841	1170	1490	564	761	783
21	300	670	410	1440	748	560	858	1670	1290	618	776	1080
22	295	610	420	1180	723	580	1050	1770	1330	678	696	708
23	290	580	420	1000	663	634	1560	1820	1180	684	642	783
24	320	550	410	883	624	634	2570	1490	1140	690	846	916
25	580	650	550	793	610	617	3390	1330	1230	727	804	1020
26	480	580	1320	720	600	670	3100	1590	1070	727	727	978
27	380	510	1560	665	615	1000	2420	1390	1000	720	582	818
28	365	460	1210	623	785	892	2270	1240	962	696	720	790
29	360	425	995	580	---	795	2570	1170	930	594	923	776
30	370	415	867	540	---	729	2460	1140	881	588	1140	769
31	850	---	737	500	---	728	---	1950	---	636	776	---
TOTAL	12786	19369	17059	26714	19102	22268	50103	47900	59473	19823	22338	24765
MEAN	412	646	550	862	682	718	1670	1548	1982	639	721	826
MAX	850	1360	1560	3830	1490	1000	3390	2810	3980	888	1140	2530
MIN	290	370	345	395	350	560	766	1060	881	546	582	340
CFSM	1.44	2.25	1.92	3.00	2.38	2.50	5.82	5.39	6.91	2.23	2.51	2.88
IN.	1.66	2.51	2.21	3.46	2.48	2.89	6.49	6.22	7.71	2.57	2.90	3.21
AC-FT	25360	38420	33840	52990	37890	44170	99380	95170	118000	39320	44310	49120

CAL YR 1976 TOTAL 559362 MEAN 1528 MAX 6680 MIN 290 CFSM 5.32 IN 72.50 AC-FT 1109000
WTR YR 1977 TOTAL 341780 MEAN 936 MAX 3980 MIN 290 CFSM 3.26 IN 44.30 AC-FT 677900

14232500 CISPUS RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°26'50", long 121°51'46", in NW¼ sec.18, T.11 N., R.8 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 60 ft (18 m) upstream from bridge to Tower Rock ranger station, 4.1 mi (6.6 km) downstream from North Fork, 8.0 mi (12.9 km) southeast of Randle, and at mile 15.8 (25.4 km).

DRAINAGE AREA.--321 mi² (831 km²).

PERIOD OF RECORD.--October 1910 to February 1912, September 1929 to current year. Water temperatures May 1950 to September 1972.

REVISED RECORDS.--WSP 794: 1934. WSP 1288: Drainage area. WSP 1935: 1950-53, 1954(M), 1955-56, 1957(M) 1960.

GAGE.--Water-stage recorder. Datum of gage is 1,221.60 ft (372.344 m) above mean sea level. Prior to Mar. 1, 1912, nonrecording gage at site 1 mi (1.6 km) upstream at different datum. Sept. 28, 1929, to Nov. 26, 1949, Oct. 1-24, 1950, water-stage recorder at site 450 ft (137 m) upstream at datum 0.26 ft (0.079 m) higher.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--49 years (water years 1911, 1930-77), 1,344 ft³/s (38.06 m³/s), 56.86 in/yr (1,444 mm/yr), 973,700 acre-ft/yr (1,200 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft³/s (615 m³/s) Jan. 15, 1974, gage height, 12.58 ft (3.834 m), from rating curve extended above 8,700 ft³/s (246 m³/s) on basis of slope-area measurement of peak flow; minimum, 183 ft³/s (5.18 m³/s), Dec. 10, 1936; minimum gage height, 2.55 ft (0.777 m) Oct. 25, 1942, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 4	2200	*5,240	91.8	*5.80	1.768

Minimum discharge, 313 ft³/s (8.86 m³/s) Sept. 17, 18, gage height, 2.92 ft (0.890 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	510	347	423	411	580	728	2260	2230	647	408	405
2	420	440	343	413	398	548	699	2480	2090	635	407	377
3	410	415	340	401	386	542	692	2830	1910	598	403	400
4	395	407	339	398	380	511	764	2420	2720	577	403	667
5	390	395	334	376	374	499	1020	2030	2990	548	401	752
6	385	384	339	366	366	513	1480	1740	2980	529	418	520
7	381	379	358	367	361	635	2010	1680	2910	514	387	451
8	385	376	382	360	357	799	2540	1600	2650	519	381	413
9	381	378	407	346	355	850	2160	1540	2130	523	377	388
10	385	372	380	354	402	737	1770	1640	1860	516	381	374
11	385	366	368	358	465	670	1510	1630	1720	520	379	364
12	376	360	363	365	470	670	1390	1470	1530	533	387	356
13	372	354	361	358	587	617	1410	1390	1470	502	387	350
14	368	350	357	351	506	585	1300	1380	1390	501	381	342
15	361	362	357	372	478	554	1230	1330	1310	500	368	331
16	357	402	371	393	469	537	1210	1260	1220	502	370	322
17	352	420	374	443	463	513	1110	1250	1160	505	370	315
18	345	470	380	571	460	508	1060	1260	1160	483	365	320
19	345	414	371	757	453	511	963	1220	1080	459	364	360
20	341	392	362	639	458	492	930	1250	1020	455	373	405
21	341	383	362	592	507	483	934	1610	938	467	392	542
22	341	376	360	555	506	497	1030	1690	934	480	370	484
23	341	370	376	524	475	549	1360	1590	867	469	357	475
24	341	369	358	498	457	545	1950	1490	807	473	431	569
25	458	380	376	485	452	530	2770	1380	823	463	384	591
26	479	369	512	465	447	544	2810	1620	767	451	406	607
27	410	348	614	452	459	601	2400	1540	726	437	372	551
28	390	343	533	435	587	636	2230	1480	691	444	354	531
29	383	350	502	423	---	612	2300	1430	700	411	437	531
30	371	352	476	420	---	590	2270	1370	657	398	672	579
31	404	---	448	417	---	629	---	1680	---	407	486	---
TOTAL	11813	11586	12150	13677	12469	18175	46010	50060	45440	15466	12371	13672
MEAN	381	386	392	441	445	586	1534	1615	1515	499	399	456
MAX	479	510	614	757	587	850	2810	2830	2990	647	672	752
MIN	341	343	334	346	355	483	692	1220	657	398	354	315
CFSM	1.19	1.20	1.22	1.37	1.39	1.83	4.78	5.03	4.72	1.56	1.24	1.42
IN.	1.37	1.34	1.41	1.58	1.45	2.11	5.33	5.80	5.27	1.79	1.43	1.58
AC-FT	23430	22980	24100	27130	24730	36050	91260	99290	90130	30680	24540	27120

CAL YR 1976 TOTAL 447214 MEAN 1222 MAX 5040 MIN 334 CFSM 3.81 IN 51.83 AC-FT 887000
WTR YR 1977 TOTAL 262089 MEAN 720 MAX 2990 MIN 315 CFSM 2.24 IN 30.47 AC-FT 521400

COWLITZ RIVER BASIN

14233400 COWLITZ RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°28'13", long 122°05'51", in NE¼ sec.6, T.11 N., R.6 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.5 mi (0.8 km) downstream from Cispus River, 8.1 mi (13.0 km) southwest of Randle, and at mile 89.3 (143.7 km).

DRAINAGE AREA.--1,030 mi² (2,668 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD. October 1947 to current year. Prior to October 1967, published as "near Kosmos". Records published for both sites October 1967 to September 1968. Monthly discharge only for some period published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 792.30 ft (241.493 m) above mean sea level (levels by city of Tacoma). Prior to Dec. 3, 1948, nonrecording gage at site 0.9 mi (1.4 km) downstream at different datum. Dec. 3, 1948, to September 1967, at site 1.4 mi (2.3 km) downstream at datum 33.01 ft (10.061 m) lower (levels by city of Tacoma).

REMARKS.--Water-discharge records excellent. Minor regulation by Packwood Lake (14225400) beginning June 1964. Small diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--30 years, 5,057 ft³/s (143.2 m³/s) 66.67 in/yr (1,693 mm/yr), 3,664,000 acre-ft/yr (4,520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,300 ft³/s (2,080 m³/s) Dec. 4, 1975, gage height 24.54 ft (7,480 m); minimum, 518 ft³/s (14.7 m³/s) Nov. 29, 1952, gage height, 2.34 ft (0.713 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	(m³/s)	Gage height (ft)	(m)
Apr. 26	0715	*9,800	278	*11.74	3.578

Minimum discharge, 925 ft³/s (26.2 m³/s) Oct. 24, gage height, 6.23 ft (1.899 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1380	2260	1300	1950	1620	2430	3070	7000	7130	2360	1480	1650
2	1340	2070	1270	1840	1550	2340	3000	7450	7110	2320	1480	1640
3	1300	1760	1250	1750	1480	2380	2900	8530	6110	2170	1490	1510
4	1230	1610	1220	1640	1430	2250	3010	7580	7370	2040	1510	2430
5	1170	1490	1200	1530	1380	2160	3620	6270	9030	1900	1540	4370
6	1140	1380	1190	1430	1340	2140	4890	5340	9050	1830	1570	2810
7	1110	1300	1200	1400	1300	2350	6580	4900	9300	1730	1440	2220
8	1110	1330	1270	1360	1280	2870	8700	5010	8790	1710	1410	1930
9	1130	1400	1420	1300	1260	3290	7960	4860	6770	1730	1400	1750
10	1140	1300	1360	1260	1340	3140	6380	5050	5790	1710	1420	1620
11	1170	1230	1300	1260	1880	2860	5340	5320	5500	1690	1400	1550
12	1130	1180	1290	1290	1970	2850	4780	4780	4990	1790	1400	1490
13	1120	1130	1260	1280	2820	2700	4690	4480	4920	1750	1450	1450
14	1100	1110	1240	1230	2590	2550	4480	4410	4810	1670	1410	1410
15	1070	1160	1220	1260	2280	2420	4240	4300	4580	1670	1360	1330
16	1050	1490	1310	1410	2120	2320	4130	4070	4260	1690	1340	1230
17	1030	2020	1320	2070	2030	2200	3890	3930	4080	1680	1390	1220
18	1010	2620	1360	3610	2020	2130	3650	3900	4170	1640	1470	1190
19	981	2210	1350	6030	1950	2120	3410	3810	4090	1560	1440	1280
20	962	1950	1300	4220	1890	2050	3240	3820	3870	1530	1460	1580
21	950	1770	1270	3470	1970	2000	3170	4160	3440	1520	1510	2310
22	942	1670	1250	3000	2040	2020	3370	4730	3350	1590	1500	2210
23	935	1570	1280	2650	1950	2170	4150	4880	3230	1630	1380	2020
24	938	1530	1260	2400	1820	2250	5800	4730	3050	1620	1650	2380
25	1220	1660	1250	2220	1780	2190	8820	4310	3010	1650	1590	2510
26	1680	1620	1690	2070	1780	2200	9390	4530	2890	1680	1560	2720
27	1350	1470	3280	1940	1800	3240	7810	4570	2720	1650	1460	2480
28	1210	1400	3060	1830	2150	3300	6970	4320	2590	1650	1250	2290
29	1180	1360	2670	1750	---	3030	7080	4150	2510	1550	1680	2220
30	1130	1350	2380	1690	---	2830	7050	3960	2420	1440	2410	2270
31	1170	---	2150	1630	---	2780	---	4360	---	1460	2130	---
TOTAL	35378	47400	47370	63770	50820	77560	155570	153510	150930	53610	46980	58870
MEAN	1141	1580	1528	2057	1815	2502	5186	4952	5031	1729	1515	1962
MAX	1680	2620	3280	6030	2820	3300	9390	8530	9300	2360	2410	4370
MIN	935	1110	1190	1230	1260	2000	2900	3810	2420	1440	1250	1190
CFSM	1.11	1.53	1.48	2.00	1.76	2.43	5.04	4.81	4.88	1.68	1.47	1.91
IN.	1.28	1.71	1.71	2.30	1.84	2.80	5.62	5.54	5.45	1.94	1.70	2.13
AC-FT	70170	94020	93960	126500	100800	153800	308600	304500	299400	106300	93180	116800

CAL YR 1976 TOTAL 1594648 MEAN 4357 MAX 23500 MIN 935 CFSM 4.23 IN 57.59 AC-FT 3163000
WTR YR 1977 TOTAL 941768 MEAN 2580 MAX 9390 MIN 935 CFSM 2.51 IN 34.01 AC-FT 1868000

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1952 to August 1968, April 1969 to current year.

INSTRUMENTATION.--Temperature recorder November 1952 to August 1968, April 1969 to current year.

REMARKS.--Interruptions in the record due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C Aug. 1, 4, 1977; minimum, 0.0°C Jan. 20, 1962, Dec. 9, 10, 1972, Jan. 6-10, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 19.0°C Aug. 1, 4; minimum, 0.0°C Jan. 6-10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
DEC							
14...	1415	1240	68	7.6	4.5	0	13.4
MAR							
15...	1235	2610	--	--	--	--	--
APR							
12...	1445	4720	48	7.5	7.2	1	12.1
JUN							
14...	1545	4900	42	7.3	12.4	3	10.4
SEP							
13...	1435	1480	71	7.1	14.1	25	10.2

DATE	IMMEDIATE COLIFORM (COL. PER 100 ML)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL SILVER (AG) (UG/L)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
DEC							
14...	B16	4	.01	.01	--	1	3.3
MAR							
15...	--	--	--	--	<10	2	13
APR							
12...	B29	1	.05	.02	<10	--	--
JUN							
14...	B77	13	.00	.02	<10	20	265
SEP							
13...	B72	48	.01	.07	<10	43	172

B Results based upon colony counts outside the ideal range.

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	12.0	12.5	8.0	7.5	8.0	3.0	2.5	2.5	2.5	2.0	2.0
2	12.5	11.5	12.0	8.5	7.5	8.0	3.0	2.5	3.0	2.5	2.0	2.0
3	11.0	9.5	10.5	8.5	8.0	8.0	3.5	2.5	3.0	2.0	1.5	1.5
4	10.5	9.0	9.5	8.0	7.5	8.0	4.0	3.5	3.5	2.0	1.5	1.5
5	10.5	9.5	10.0	7.5	7.0	7.5	4.0	3.5	4.0	1.5	0.5	1.0
6	11.0	9.5	10.5	7.5	6.5	7.0	4.5	4.0	4.0	0.5	0.0	0.5
7	12.0	10.0	11.0	8.0	7.0	7.5	5.0	4.5	4.5	0.5	0.0	0.5
8	12.0	10.5	11.5	8.5	7.5	8.0	5.5	5.0	5.0	0.5	0.0	0.0
9	11.0	10.5	11.0	8.5	8.0	8.0	5.5	5.0	5.0	0.5	0.0	0.0
10	11.0	10.5	11.0	8.0	7.5	8.0	5.5	5.0	5.0	1.0	0.0	0.0
11	12.5	11.0	11.5	8.0	7.5	8.0	5.0	4.0	4.5	2.5	1.0	1.5
12	11.5	10.0	10.5	7.5	6.5	7.0	4.0	3.5	3.5	3.5	2.5	3.0
13	10.5	9.0	9.5	7.0	5.5	6.0	4.5	4.0	4.0	4.0	3.5	3.5
14	10.0	8.5	9.5	6.5	5.5	6.0	4.5	4.0	4.0	4.0	4.0	4.0
15	10.0	8.5	9.0	7.0	6.5	7.0	5.5	4.5	5.0	4.5	4.0	4.5
16	9.5	8.0	9.0	8.0	7.0	7.5	5.5	5.0	5.0	4.5	4.0	4.5
17	9.0	7.5	8.0	8.0	7.5	7.5	5.0	4.5	5.0	5.0	4.5	4.5
18	---	---	---	7.5	6.0	7.0	5.5	5.0	5.0	5.0	4.5	5.0
19	---	---	---	6.0	5.5	5.5	4.5	4.0	4.0	5.0	4.0	4.0
20	8.0	6.5	7.0	5.5	5.0	5.5	4.0	3.0	3.5	4.0	3.5	4.0
21	7.5	6.5	7.0	6.0	5.5	5.5	3.5	3.0	3.5	4.5	4.0	4.0
22	8.0	7.0	7.5	6.0	5.5	5.5	4.5	3.5	4.0	4.0	3.0	3.5
23	8.0	7.0	7.5	5.5	5.0	5.0	4.5	4.5	4.5	3.0	2.5	3.0
24	7.5	7.0	7.0	6.0	5.0	5.5	4.5	4.0	4.0	2.5	2.0	2.5
25	7.5	7.0	7.5	6.0	5.5	6.0	4.5	4.0	4.0	3.0	2.0	2.5
26	8.5	7.5	7.5	5.5	4.0	4.5	5.0	4.5	4.5	2.5	2.0	2.5
27	8.0	7.0	7.5	3.5	2.5	3.0	5.0	4.5	5.0	2.5	1.5	2.0
28	7.5	7.0	7.0	2.5	1.5	2.0	4.5	3.5	4.0	2.5	1.5	2.0
29	8.0	7.0	7.0	2.5	1.5	2.0	4.0	3.5	4.0	2.0	1.5	2.0
30	7.0	6.0	6.5	2.5	2.0	2.5	4.0	3.5	4.0	2.5	1.5	2.0
31	8.0	6.5	7.5	---	---	---	3.5	2.5	3.0	3.5	2.5	3.0
MONTH	13.5	6.0	9.0	8.5	1.5	6.0	5.5	2.5	4.0	5.0	0.0	2.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.0	3.5	4.0	5.5	4.5	5.0	6.5	5.0	6.0	8.0	7.0	7.5
2	4.5	3.5	4.0	4.5	4.0	4.5	7.0	5.5	6.5	7.0	7.0	7.0
3	4.0	3.5	4.0	4.5	4.0	4.5	8.0	6.0	7.0	7.0	6.5	7.0
4	4.0	3.5	4.0	5.0	4.0	4.5	9.0	7.0	8.0	6.5	5.5	6.0
5	4.0	3.5	4.0	6.0	4.5	5.5	9.0	7.0	8.0	6.5	5.5	6.0
6	5.0	3.5	4.5	6.0	5.0	5.5	8.0	7.0	8.0	7.5	6.0	7.0
7	5.0	4.5	4.5	5.5	5.0	5.0	8.0	6.5	7.5	8.0	7.0	7.5
8	5.5	4.5	5.0	4.5	4.0	4.5	8.0	5.5	6.5	9.0	6.5	8.0
9	6.0	5.0	5.5	4.5	4.0	4.0	6.0	5.0	5.5	9.5	8.0	9.0
10	6.5	6.0	6.0	4.5	3.5	4.0	6.0	5.5	5.5	9.5	7.0	8.0
11	6.0	5.5	5.5	5.0	4.0	4.5	7.5	6.0	6.5	8.0	6.5	7.0
12	6.5	5.5	6.0	5.0	4.5	5.0	7.5	6.0	7.0	8.5	7.0	8.0
13	6.0	5.5	6.0	5.5	4.0	4.5	7.5	6.5	7.0	9.0	8.0	8.5
14	5.0	4.5	5.0	5.0	3.5	4.0	7.0	5.5	6.0	9.0	8.0	8.5
15	5.0	4.0	5.0	5.5	3.5	4.5	6.5	6.5	6.5	8.5	8.0	8.0
16	5.0	4.5	5.0	6.0	4.5	5.0	7.0	6.0	6.5	8.0	7.5	8.0
17	5.5	5.0	5.0	5.5	4.0	5.0	7.0	5.5	6.5	8.0	7.0	7.5
18	6.5	5.0	6.0	5.5	5.0	5.5	7.5	6.0	6.5	8.5	7.5	8.0
19	---	---	---	6.0	5.0	5.5	8.0	5.5	6.5	10.0	8.0	9.0
20	---	---	---	5.5	5.0	5.5	8.0	6.0	7.0	9.5	8.5	9.5
21	---	---	---	6.0	5.0	5.5	8.0	7.0	7.5	10.5	9.0	10.0
22	---	---	---	7.5	5.5	6.5	9.5	6.5	8.0	10.5	9.0	9.5
23	5.0	4.5	5.0	7.0	6.5	7.0	9.5	8.0	9.0	10.0	8.0	9.0
24	5.0	4.0	4.5	7.0	5.5	6.0	9.5	8.0	9.0	9.0	7.5	8.0
25	4.5	4.0	4.0	7.0	5.5	6.5	9.0	7.5	8.0	9.0	8.0	8.5
26	4.5	3.5	4.0	6.5	5.5	6.0	7.5	6.5	7.0	9.0	8.5	8.5
27	5.5	4.5	5.0	5.5	4.5	4.5	8.0	6.5	7.5	8.5	7.5	8.0
28	6.0	5.5	5.5	5.5	4.0	4.5	8.5	7.5	8.0	8.0	7.0	7.5
29	---	---	---	6.0	4.5	5.5	8.5	8.0	8.5	9.0	7.5	8.5
30	---	---	---	7.5	5.5	6.5	8.5	7.5	8.0	8.5	8.0	8.5
31	---	---	---	6.5	5.5	6.0	---	---	---	8.5	8.0	8.0
MONTH	6.5	3.5	5.0	7.5	3.5	5.0	9.5	5.0	7.0	10.5	5.5	8.0

COWLITZ RIVER BASIN

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	8.0	8.5	16.5	13.5	15.0	19.0	16.0	17.5			
2	9.0	8.0	8.5	14.5	13.0	14.0	18.5	16.0	17.5			
3	9.0	8.0	8.5	13.0	12.0	12.5	18.5	16.0	17.5			
4	8.5	8.0	8.0	12.5	11.0	12.0	19.0	16.0	17.5			
5	11.0	7.5	9.0	---	---	---	18.5	16.0	17.0			
6	11.5	10.5	11.0	---	---	---	17.5	14.5	16.5			
7	12.0	10.5	11.5	---	---	---	18.0	15.5	17.0			
8	12.0	9.5	10.5	---	---	---	18.5	16.5	17.5			
9	10.5	8.5	9.5	---	---	---	18.5	16.5	17.5			
10	11.5	10.0	11.0	---	---	---	18.0	15.5	17.0			
11	11.5	10.0	10.5	---	---	---	18.5	15.5	17.0			
12	12.5	9.5	11.0	---	---	---	18.5	16.0	17.5			
13	13.0	11.5	12.5	---	---	---	18.5	16.5	17.5			
14	13.0	12.0	12.5	---	---	---	18.0	15.5	17.0			
15	13.5	12.0	12.5	---	---	---	17.5	15.0	16.5			
16	13.5	12.0	13.0	---	---	---	18.0	15.5	17.0			
17	---	---	---	---	---	---	18.5	16.0	17.5			
18	---	---	---	---	---	---	18.5	16.0	17.5			
19	---	---	---	15.5	12.5	14.0	17.5	15.5	16.5			
20	---	---	---	15.5	13.5	14.5	18.0	15.5	16.5			
21	13.0	11.5	12.0	17.0	14.0	15.5	17.5	15.5	16.0			
22	15.0	12.5	13.5	17.5	14.5	16.0	15.0	13.5	14.0			
23	15.0	13.0	14.0	18.0	15.0	16.5	14.5	13.5	13.5			
24	15.0	13.0	14.0	18.0	15.0	16.5	---	---	---			
25	16.0	14.0	15.0	17.5	15.5	16.5	---	---	---			
26	15.5	13.5	14.5	17.0	14.5	16.0	---	---	---			
27	15.5	13.5	14.5	18.5	15.0	17.0	---	---	---			
28	16.0	13.5	15.0	18.0	16.0	16.5	---	---	---			
29	16.0	13.5	14.5	17.0	14.5	15.5	---	---	---			
30	16.0	13.5	14.5	17.5	14.5	16.0	---	---	---			
31	---	---	---	18.5	15.5	17.0	---	---	---			
MONTH	16.0	7.5	12.0	18.5	11.0	15.5	19.0	13.5	17.0			
YEAR	19.0	0.0	8.1									

14234800 RIFFE LAKE NEAR MOSSYROCK, WA

LOCATION.--Lat 46°32'07", long 122°25'25", in SE¼SW¼ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, in emergency generator room on top of Mossyrock Dam on Cowlitz River, 2.8 mi (4.5 km) east of Mossyrock and at mile 65.5 (105.4 km).

DRAINAGE AREA.--1,154 mi^2 (2,989 km^2).

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder; nonrecording gage prior to July 25, 1968. Datum of gage is at mean sea level (levels by city of Tacoma).

REVISED RECORDS.--WRD Wash. 1974: 1973.

REMARKS.--Reservoir is formed by concrete arch dam, completed in April 1968; storage began Apr. 3, 1968. Usable capacity, 1,297,400 acre-ft (1,600 hm^3) between elevations 600 ft (182.9 m), minimum operating level, and 770 ft (234.7 m), normal operating pool. Dead storage below elevation 600 ft (182.9 m), 288,900 acre-ft (356 hm^3). Crest of spillway is at elevation 728.5 ft (222.05 m). Water used by city of Tacoma for power development. Elevation records collected in cooperation with city of Tacoma. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents 1,686,300 acre-ft (2,080 hm^3) July 31, 1972, elevation, 778.63 ft (237.326 m); minimum since normal low operating level was attained, 658,503 acre-ft (812 hm^3) Mar. 17, 1977, elevation, 666.88 ft (203.265 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,610,337 acre-ft (1,990 hm^3) Oct. 1, elevation, 772.11 ft (235.339 m); minimum, 658,503 acre-ft (812 hm^3) Mar. 17, elevation, 666.88 ft (203.265 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	772.06	1,609,764	
Oct. 31	750.66	1,378,692	-231,072
Nov. 30	721.02	1,102,150	-276,542
Dec. 31	701.50	925,994	-176,156
CAL YR 1976			-812,672
Jan. 31	675.96	725,365	-200,629
Feb. 28	668.81	673,924	-51,441
Mar. 31	670.72	685,404	+11,480
Apr. 30	704.48	949,037	+263,633
May 31	735.85	1,232,145	+283,108
June 30	760.62	1,482,953	+250,808
July 31	761.33	1,490,593	+7,640
Aug. 31	759.78	1,473,952	-16,641
Sept. 30	763.00	1,508,678	+34,726
WTR YR 1977			-101,086

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
14...	1400	1.0	44	7.2	9.7	1	10.7	B10	.01	.01
14...	1410	20	44	7.3	9.7	1	10.6	B17	.01	.01
14...	1420	50	43	7.6	9.7	1	10.5	B3	.01	.01
14...	1430	100	43	7.6	9.7	1	10.6	B23	.01	.01
APR										
12...	1415	1.0	51	7.6	9.3	1	12.0	<1	.08	.01
12...	1425	20	53	7.6	7.8	2	12.0	B2	.08	.01
12...	1435	50	51	7.6	7.4	2	12.1	B2	.08	.01
12...	1445	100	51	7.5	7.2	1	12.0	B3	.09	.01
JUN										
14...	1355	1.0	50	7.5	12.9	3	10.5	7	.03	.00
14...	1400	20	57	7.2	12.3	1	10.5	8	.03	.00
14...	1405	50	55	7.2	11.7	1	10.5	6	.04	.00
14...	1410	100	57	7.1	9.4	1	10.7	3	.05	.00
SEP										
13...	1140	1.0	98	7.3	19.1	0	9.0	B120	.00	.01
13...	1150	20	67	6.8	18.9	0	9.0	B200	.00	.01
13...	1200	50	66	6.7	18.8	0	8.4	B990	.00	.01
13...	1205	100	66	6.5	7.9	0	8.6	730	.05	.00

B Results based upon colony counts outside the ideal range.

14238000 COWLITZ RIVER BELOW MOSSYROCK DAM, WA

LOCATION.--Lat 46°32'10", long 122°25'45", in SE¼SE¼ sec.9, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on left bank 0.2 mi (0.3 km) downstream from Mossyrock Dam and 2.6 mi (4.2 km) east from town of Mossyrock.

DRAINAGE AREA.--1,154 mi² (2,990 km²) at Mossyrock Dam.

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1970 to current year.

INSTRUMENTATION.--Temperature recorder since July 1970.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 13.0°C June 17, 1974; minimum, 3.5°C Feb. 9, 10, 25, 1972.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 12.0°C on Nov. 7, 12, 20, 21; minimum recorded, 6.0°C many days during period January to April.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.5	9.5	9.5	10.5	10.5	10.5	11.0	11.0	11.0	8.5	8.5	8.5
2	9.5	9.5	9.5	11.0	10.5	10.5	11.0	10.5	10.5	8.5	8.5	8.5
3	9.5	9.5	9.5	11.0	10.5	10.5	10.5	10.5	10.5	8.5	8.0	8.0
4	10.0	9.5	9.5	11.0	10.5	10.5	10.5	10.5	10.5	8.0	8.0	8.0
5	9.5	9.5	9.5	11.0	10.5	11.0	10.5	10.0	10.0	8.0	8.0	8.0
6	10.0	9.5	9.5	11.5	11.0	11.0	10.0	10.0	10.0	8.0	8.0	8.0
7	10.0	9.5	9.5	12.0	11.0	11.0	10.5	10.0	10.0	8.0	8.0	8.0
8	9.5	9.0	9.5	11.0	10.5	11.0	10.0	10.0	10.0	8.0	7.5	7.5
9	10.0	9.5	10.0	11.0	11.0	11.0	10.0	9.5	10.0	7.5	7.5	7.5
10	9.5	9.5	9.5	11.0	11.0	11.0	9.5	9.5	9.5	7.5	7.5	7.5
11	10.0	9.5	9.5	11.5	11.0	11.5	10.0	9.5	9.5	7.5	7.5	7.5
12	10.0	9.5	9.5	12.0	11.0	11.0	10.0	10.0	10.0	7.5	7.0	7.0
13	10.0	9.5	9.5	11.5	11.0	11.5	10.0	10.0	10.0	7.0	7.0	7.0
14	10.0	10.0	10.0	11.5	11.0	11.5	10.0	9.5	10.0	7.0	7.0	7.0
15	10.0	9.5	10.0	11.5	11.0	11.0	9.5	9.5	9.5	7.0	6.5	7.0
16	10.0	9.5	10.0	11.5	11.0	11.5	9.5	9.5	9.5	7.0	6.5	6.5
17	10.0	10.0	10.0	11.5	11.0	11.0	9.5	9.5	9.5	7.0	7.0	7.0
18	10.0	10.0	10.0	11.5	11.0	11.0	9.5	9.5	9.5	7.0	6.5	7.0
19	10.0	10.0	10.0	11.5	11.0	11.5	9.5	9.5	9.5	7.0	6.5	7.0
20	10.5	10.0	10.5	12.0	11.5	11.5	9.5	9.5	9.5	7.0	7.0	7.0
21	10.5	10.0	10.0	12.0	11.5	12.0	9.5	9.5	9.5	7.0	6.5	7.0
22	10.0	10.0	10.0	11.5	11.5	11.5	9.5	9.5	9.5	6.5	6.5	6.5
23	10.0	10.0	10.0	11.5	11.5	11.5	9.5	9.5	9.5	6.5	6.5	6.5
24	10.5	10.0	10.0	11.5	11.5	11.5	9.5	9.0	9.0	6.5	6.5	6.5
25	10.5	10.0	10.0	11.0	11.0	11.0	9.0	9.0	9.0	6.5	6.5	6.5
26	11.0	10.5	10.5	11.0	11.0	11.0	9.0	9.0	9.0	6.5	6.0	6.5
27	11.0	10.0	10.5	11.0	11.0	11.0	9.0	9.0	9.0	6.5	6.5	6.5
28	11.0	10.0	10.5	11.0	11.0	11.0	9.0	9.0	9.0	6.5	6.5	6.5
29	11.0	10.5	11.0	11.0	11.0	11.0	9.0	9.0	9.0	6.5	6.0	6.0
30	11.0	10.5	10.5	11.0	11.0	11.0	9.0	9.0	9.0	6.0	6.0	6.0
31	10.5	10.5	10.5	---	---	---	9.0	8.5	8.5	6.0	6.0	6.0
MONTH	11.0	9.0	10.0	12.0	10.5	11.0	11.0	8.5	9.5	8.5	6.0	7.0

14234800 COWLITZ RIVER BELOW MOSSYROCK DAM, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	6.0	6.0	6.5	6.0	6.5	6.0	6.0	6.0	7.0	7.0	7.0
2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0
3	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5	7.0	6.5	7.0
4	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5	7.0	7.0	7.0
5	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5	7.0	7.0	7.0
6	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	6.5	7.0	7.0	7.0
7	6.0	6.0	6.0	6.0	6.0	6.0	7.5	6.5	7.0	7.0	7.0	7.0
8	6.0	6.0	6.0	6.0	6.0	6.0	7.5	6.5	7.0	7.5	7.0	7.0
9	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0	7.5	7.0	7.5
10	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	6.5	7.5	6.5	7.0
11	6.0	6.0	6.0	6.5	6.0	6.0	7.0	6.5	7.0	7.0	7.0	7.0
12	6.0	6.0	6.0	6.0	6.0	6.0	7.5	6.5	6.5	7.5	7.0	7.0
13	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5	7.5	7.0	7.0
14	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.5	7.0	7.0	7.0
15	6.5	6.0	6.0	6.0	6.0	6.0	7.0	6.5	6.5	7.5	7.0	7.0
16	6.5	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.5	7.0	7.0
17	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0	7.0	7.0	7.0
18	6.5	6.0	6.0	6.0	6.0	6.0	7.5	6.5	7.0	7.0	7.0	7.0
19	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.5	6.5	7.5	7.0	7.5
20	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.5	6.5	7.5	7.0	7.0
21	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.5	7.0	7.5	7.0	7.0
22	6.5	6.5	6.5	6.0	6.0	6.0	8.0	7.0	7.5	7.5	7.0	7.5
23	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.5	7.5	7.5	7.0	7.0
24	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.0	7.5	7.5	7.0	7.0
25	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0	7.5	7.0	7.5
26	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	6.5	7.5	7.0	7.0
27	6.5	6.5	6.0	6.0	6.0	6.0	7.0	6.5	7.0	7.0	7.0	7.0
28	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.5	7.0	7.5	7.0	7.5
29	---	---	---	6.0	6.0	6.0	7.0	6.5	7.0	7.5	7.5	7.5
30	---	---	---	7.0	6.0	6.0	7.0	6.5	7.0	7.5	7.5	7.5
31	---	---	---	6.0	6.0	6.0	---	---	---	7.5	7.5	7.5
MONTH	6.5	6.0	6.0	7.0	6.0	6.0	8.0	6.0	7.0	7.5	6.5	7.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.0	7.5	7.5	8.0	7.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5
2	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
3	7.5	7.5	7.5	7.5	7.5	7.5	8.0	7.5	7.5	---	---	---
4	7.5	7.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5	---	---	---
5	8.0	7.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5	---	---	---
6	8.0	7.5	8.0	7.5	7.5	7.5	7.5	7.5	7.5	---	---	---
7	8.0	7.5	8.0	8.0	7.5	7.5	8.0	7.5	8.0	---	---	---
8	8.0	7.5	8.0	8.0	7.5	7.5	8.0	7.5	7.5	---	---	---
9	8.0	7.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	---	---	---
10	8.0	7.0	7.5	7.5	7.5	7.5	8.0	7.5	8.0	---	---	---
11	8.0	7.0	7.5	7.5	7.5	7.5	8.5	7.5	8.0	---	---	---
12	8.0	7.5	8.0	8.0	7.5	7.5	8.0	7.0	8.0	---	---	---
13	8.0	7.5	7.5	8.0	7.5	8.0	7.5	7.5	7.5	---	---	---
14	8.0	7.0	7.5	7.5	7.0	7.5	8.0	7.5	7.5	---	---	---
15	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	---	---	---
16	8.0	7.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	---	---	---
17	8.0	7.0	7.5	8.0	7.5	7.5	8.0	7.5	7.5	---	---	---
18	7.5	7.0	7.5	8.0	7.5	7.5	7.5	7.5	7.5	---	---	---
19	7.5	7.5	7.5	8.0	7.5	8.0	7.5	7.5	7.5	---	---	---
20	7.5	7.5	7.5	8.0	7.0	7.5	8.0	7.0	8.0	8.0	8.0	8.0
21	7.5	7.0	7.5	8.0	7.5	8.0	8.0	7.5	8.0	8.0	8.0	8.0
22	8.0	7.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5	8.5	8.0	8.0
23	8.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5	7.5	8.5	8.0	8.0
24	8.0	7.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5	8.5	8.0	8.0
25	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.5	8.0	8.0
26	8.0	7.5	8.0	7.5	7.5	7.5	7.5	7.5	7.5	8.5	8.0	8.0
27	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.5	8.0	8.0
28	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.5	8.5	8.5
29	8.0	7.5	7.5	8.0	7.5	7.5	7.5	7.5	7.5	8.5	8.5	8.5
30	8.0	7.5	7.5	8.0	7.5	8.0	7.5	7.5	7.5	8.5	8.5	8.5
31	---	---	---	8.5	7.5	8.0	7.5	7.5	7.5	---	---	---
MONTH	8.5	7.0	7.5	8.5	7.0	7.5	8.5	7.0	7.5	8.5	7.5	8.0
YEAR	12.0	6.0	8.0									

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA

LOCATION.--Lat 46°35'44", long 122°27'50", in NE¼SW¼ sec.20, T.13 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.9 mi (1.4 km) upstream from Bear Canyon Creek, 3.5 mi (5.6 km) southeast of Cinebar, and at mile 7.1 (11.4 km).

DRAINAGE AREA.--141 mi² (365 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WRD Wash. 1972: 1957(M), 1959(P), 1960(P), 1961(M), 1963(P), 1964(M), 1965, 1967(P), 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from topographic map.

REMARKS.--Records excellent. Several small diversions for municipal and domestic use above station. No regulation.

AVERAGE DISCHARGE.--21 years, 855 ft³/s (24.21 m³/s) 82.35 in/yr (2,092 mm/yr), 619,400 acre-ft/yr (764 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s (498 m³/s) Jan. 20, 1972, Dec. 1, 1975, from rating curve extended above 10,500 ft³/s (297 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 14.79 ft (4.508 m) Jan. 20, 1972; minimum, 52 ft³/s (1.47 m³/s), Sept. 27-29, 1967; minimum gage height, 1.06 ft (0.323 m) Aug. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,200 ft³/s (176 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 27	0330	*3,130	88.6	*6.45	1.966

Minimum discharge, 68 ft³/s (1.93 m³/s) Aug. 17, 18, 19, gage height, 2.28 ft (0.695 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	770	215	450	335	1130	1110	506	1800	165	93	296
2	99	528	202	412	285	976	1010	554	1380	167	89	229
3	115	392	191	367	266	1080	929	869	1090	167	87	316
4	99	319	166	333	250	929	966	1140	1450	199	87	907
5	96	271	175	304	239	780	1170	1105	1210	190	89	764
6	92	237	176	283	228	550	1510	928	895	185	98	489
7	89	213	230	268	221	1000	1710	867	836	170	89	365
8	86	200	335	249	216	1610	1760	923	730	163	83	296
9	86	186	471	239	209	2230	1380	835	660	157	81	249
10	113	176	383	238	257	1200	1080	764	580	155	77	219
11	117	168	337	766	453	981	936	718	530	155	77	197
12	101	156	307	367	568	1030	827	625	490	160	76	180
13	97	149	286	366	613	907	921	586	450	155	76	167
14	92	167	265	351	513	840	866	557	418	147	74	157
15	88	180	263	450	436	767	809	623	390	160	72	152
16	86	391	255	676	390	730	909	628	368	135	72	158
17	83	466	259	770	356	640	831	693	342	145	70	143
18	81	562	317	835	321	660	737	670	330	140	68	168
19	79	426	287	819	297	696	659	614	306	130	68	206
20	78	352	267	686	282	670	603	565	294	125	70	379
21	77	320	252	586	287	737	588	570	290	121	78	716
22	76	271	239	511	395	825	652	514	278	116	72	569
23	76	267	306	458	403	1050	730	505	259	116	87	586
24	80	233	282	408	367	1080	802	541	245	110	228	882
25	518	373	355	376	366	867	863	510	231	108	196	780
26	461	306	1130	351	383	1150	861	656	221	105	176	662
27	287	272	1570	331	565	2650	665	655	212	103	155	566
28	224	252	1010	298	1120	1810	658	879	205	101	199	471
29	207	238	760	283	---	1380	567	1000	196	101	417	439
30	180	231	411	260	---	1120	532	850	190	99	855	399
31	410	---	518	281	---	1050	---	1140	---	95	444	---
TOTAL	4465	9008	12432	12871	10556	33145	27548	22592	16954	4383	4492	11953
MEAN	144	300	401	415	377	1070	918	729	565	141	145	398
MAX	518	770	1570	835	1120	2650	1760	1190	1800	199	855	907
MIN	76	167	176	238	209	550	532	505	190	95	68	143
CFSM	1.02	2.13	2.84	2.94	2.67	7.59	6.51	5.17	4.01	1.00	1.03	2.82
IN.	1.18	2.38	3.28	3.40	2.78	8.76	7.27	5.96	4.47	1.16	1.19	3.15
AC-FT	8860	17870	24660	25530	20930	65820	54640	44810	33630	8690	8910	23710

CAL YR 1976 TOTAL 249736 MEAN 682 MAX 12000 MIN 76 CFSM 4.84 IN 65.89 AC-FT 495400
WTR YR 1977 TOTAL 170437 MEAN 467 MAX 2650 MIN 68 CFSM 3.31 IN 44.97 AC-FT 338100

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1965 to current year.

INSTRUMENTATION.--Temperature recorder since May 1965.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.5°C July 30, 1965; minimum, 0.5°C Feb. 2, 1972, Jan. 5-9, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 23.5°C Aug. 12; minimum recorded, 2.0°C Jan. 29, 30.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	9.0	8.5	8.5	4.0	3.0	3.5	---	---	---
2	---	---	---	10.0	8.0	9.0	4.0	3.0	3.5	---	---	---
3	---	---	---	9.5	8.0	9.0	4.5	3.5	4.0	---	---	---
4	---	---	---	9.0	8.0	8.5	4.5	4.5	4.5	---	---	---
5	---	---	---	9.0	8.0	8.5	5.5	4.5	5.0	---	---	---
6	---	---	---	9.5	8.0	8.5	6.0	5.0	5.5	---	---	---
7	---	---	---	9.0	8.5	9.0	6.5	6.0	6.0	---	---	---
8	---	---	---	11.0	9.0	10.0	6.5	6.0	6.5	---	---	---
9	---	---	---	10.0	8.5	9.5	6.0	5.5	6.0	---	---	---
10	---	---	---	9.5	8.0	8.5	6.5	5.5	6.0	---	---	---
11	---	---	---	10.0	8.5	9.0	5.5	4.5	5.0	---	---	---
12	---	---	---	8.5	7.0	7.5	5.0	4.0	4.5	---	---	---
13	---	---	---	7.5	6.0	6.5	6.0	5.0	5.5	---	---	---
14	---	---	---	8.0	7.0	7.5	6.0	5.5	5.5	---	---	---
15	---	---	---	9.0	8.5	8.5	7.0	6.0	6.5	---	---	---
16	---	---	---	9.0	9.0	9.0	6.5	6.0	6.0	---	---	---
17	---	---	---	9.5	8.5	9.5	6.0	5.5	6.0	---	---	---
18	---	---	---	8.5	7.0	7.5	6.0	5.0	6.0	---	---	---
19	11.0	7.0	9.0	7.5	6.5	7.0	5.0	4.0	4.5	---	---	---
20	10.5	7.0	8.5	7.5	6.0	7.0	---	---	---	---	---	---
21	10.0	7.0	8.5	7.5	7.0	7.0	---	---	---	---	---	---
22	10.0	8.5	9.0	7.0	6.0	6.5	---	---	---	---	---	---
23	10.0	9.0	9.0	6.5	5.0	6.0	---	---	---	---	---	---
24	9.0	8.5	9.0	7.5	6.0	6.5	---	---	---	---	---	---
25	9.0	8.5	9.0	7.5	6.0	7.0	---	---	---	---	---	---
26	10.0	8.5	9.0	6.0	4.0	5.0	---	---	---	---	---	---
27	9.0	8.0	8.5	4.0	3.0	3.5	---	---	---	---	---	---
28	8.5	8.0	8.5	3.5	2.5	3.0	---	---	---	---	---	---
29	9.0	7.5	8.5	4.0	2.5	3.5	---	---	---	3.0	2.0	3.0
30	8.5	7.0	8.0	4.0	3.0	3.5	---	---	---	3.5	2.0	3.0
31	9.0	8.0	8.5	---	---	---	---	---	---	4.5	3.5	4.0
MONTH	11.0	7.0	8.5	11.0	2.5	7.5	7.0	3.0	5.5	---	---	---

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14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	4.5	5.0	6.0	5.0	5.5	7.5	5.5	6.5	10.0	8.5	9.5
2	5.0	4.0	4.5	5.5	4.5	5.0	7.0	5.0	6.0	9.5	9.0	9.0
3	5.0	3.5	4.5	6.0	4.5	5.0	9.0	5.0	7.0	8.5	7.0	8.0
4	6.0	4.5	5.0	6.0	4.5	5.5	9.5	5.5	7.5	7.0	6.5	6.5
5	5.5	4.0	5.0	7.0	4.5	5.5	9.5	5.5	7.5	8.0	6.0	7.0
6	7.0	5.0	6.0	6.0	5.0	5.5	9.5	5.5	7.5	9.0	6.5	7.5
7	6.5	5.0	5.5	6.0	5.0	5.5	9.5	6.0	7.5	9.5	7.0	8.0
8	6.5	5.0	6.0	5.5	5.0	5.0	7.0	6.0	6.5	10.0	7.5	8.5
9	7.5	6.0	6.5	5.0	4.5	4.5	6.5	5.5	6.0	11.5	7.0	9.0
10	7.5	6.5	7.0	6.0	4.5	5.5	6.5	5.5	6.0	10.0	7.5	8.5
11	7.0	6.0	6.5	6.0	4.0	5.0	8.5	6.0	7.0	9.5	7.0	8.0
12	7.5	6.5	7.0	5.5	4.5	5.0	8.5	5.0	7.0	10.5	6.0	8.5
13	7.0	6.0	6.5	6.0	4.0	5.0	7.5	6.5	7.0	10.0	8.0	9.0
14	6.5	4.5	5.5	4.5	3.0	3.5	7.5	5.5	6.5	9.5	8.0	8.5
15	7.0	5.0	6.0	7.0	3.5	5.0	7.0	6.0	6.5	9.0	7.0	8.5
16	7.0	6.0	6.5	5.0	4.5	5.0	7.5	6.0	6.5	8.5	7.5	7.5
17	7.5	6.5	7.0	5.5	3.5	5.0	7.5	5.0	6.0	8.5	7.0	8.0
18	8.5	6.0	7.0	6.0	5.0	5.[illegible]	8.0	5.5	6.5	9.0	7.5	8.0
19	8.0	6.0	7.0	6.0	5.0	5.5	9.0	5.0	7.0	10.5	7.5	9.0
20	7.0	6.5	7.0	5.5	5.0	5.0	9.0	5.5	7.5	10.5	8.0	9.5
21	6.5	6.0	6.0	6.5	5.0	6.0	8.0	7.0	7.5	10.5	9.0	9.5
22	6.0	5.5	6.0	7.5	5.5	6.5	11.0	6.5	8.5	12.0	8.5	10.0
23	6.0	4.5	5.5	6.5	5.5	6.0	10.0	7.5	9.0	10.0	8.5	9.0
24	5.5	4.5	5.0	6.5	5.0	5.5	12.0	7.5	9.5	11.0	8.0	9.0
25	5.5	4.0	4.5	7.0	5.0	6.0	10.0	8.0	9.0	10.5	7.5	9.5
26	5.5	4.0	5.0	6.0	5.5	5.5	9.0	7.5	8.0	9.5	8.0	9.0
27	6.5	5.5	6.0	5.5	4.0	5.0	11.5	6.5	9.0	8.0	7.0	8.0
28	6.5	5.5	6.0	6.5	4.5	5.5	11.0	8.0	9.5	8.0	7.0	7.5
29	---	---	---	6.5	5.0	6.0	12.0	8.5	10.0	9.5	7.0	8.0
30	---	---	---	7.5	4.5	6.0	12.5	8.5	10.5	8.5	7.0	8.0
31	---	---	---	6.0	5.5	5.5	---	---	---	9.0	8.0	8.5
MONTH	8.5	3.5	6.0	7.5	3.0	5.5	12.5	5.0	7.5	12.0	6.0	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.0	8.5	9.0	17.0	13.0	14.5	22.0	14.5	18.0	15.5	11.0	13.5
2	10.0	7.5	9.0	14.0	12.5	13.5	22.0	14.5	18.0	14.0	12.5	13.0
3	9.0	8.0	8.5	12.5	11.5	12.0	22.0	15.0	18.5	14.5	12.5	13.5
4	9.5	8.5	9.0	13.0	10.5	12.0	21.5	15.5	18.5	14.0	13.0	13.5
5	13.5	8.0	11.0	14.0	10.5	12.5	21.0	15.5	18.0	14.5	11.5	13.0
6	14.0	10.0	12.0	17.5	11.0	14.0	22.0	15.0	18.0	14.5	10.5	12.5
7	15.0	10.5	12.5	18.5	11.5	15.0	22.0	15.0	18.0	13.5	11.0	12.0
8	12.0	10.0	11.0	17.5	13.0	15.0	22.0	15.5	18.5	14.5	10.5	12.5
9	13.5	8.5	11.0	15.0	13.0	13.5	22.0	14.5	18.5	14.5	10.5	12.5
10	14.0	9.0	11.5	16.5	11.5	13.5	22.0	15.0	18.5	15.0	11.0	13.0
11	12.5	10.0	11.0	14.5	13.0	13.5	23.0	15.0	19.0	15.5	11.0	13.0
12	14.5	10.0	12.0	13.5	12.0	12.5	23.5	16.0	19.5	16.0	11.5	13.5
13	14.5	10.5	12.0	16.0	12.0	13.5	22.5	16.0	19.0	16.5	12.0	14.0
14	14.0	11.0	12.0	18.0	13.0	15.0	21.0	15.5	18.0	15.0	13.0	13.5
15	14.5	11.0	12.5	17.0	13.5	15.0	22.0	15.5	18.5	13.0	12.0	12.5
16	16.5	11.0	13.5	17.0	13.5	15.5	22.5	15.0	19.0	13.0	11.0	12.0
17	17.5	11.5	14.5	15.0	13.5	14.5	23.0	16.0	19.5	12.5	11.0	11.5
18	15.5	12.5	14.0	16.5	11.5	14.0	20.0	16.0	18.0	12.5	11.5	12.0
19	16.0	11.5	14.0	18.5	11.5	15.0	18.0	15.5	16.5	12.5	11.5	12.0
20	14.0	12.0	12.5	18.5	12.5	15.5	18.0	15.5	16.5	12.0	11.5	12.0
21	13.5	11.5	12.5	19.5	13.0	16.0	16.5	15.0	15.5	12.0	10.5	11.0
22	17.5	12.0	14.5	20.5	13.5	16.5	16.5	14.0	15.0	11.5	9.5	10.5
23	17.5	12.0	14.5	20.5	13.5	17.0	15.0	13.5	14.0	10.5	10.0	10.0
24	18.0	12.0	15.0	21.5	14.5	18.0	14.5	13.0	14.0	11.0	10.0	10.5
25	18.0	13.0	15.5	18.0	14.5	16.5	14.0	13.0	13.5	10.5	9.5	10.0
26	17.5	12.5	15.0	18.5	14.5	16.0	14.5	13.0	13.5	11.0	9.0	10.0
27	17.5	13.0	15.0	20.5	14.5	17.0	14.0	12.5	13.5	10.5	9.5	10.0
28	17.5	12.5	15.0	17.5	14.5	16.0	14.0	13.0	13.5	11.5	10.0	10.5
29	17.5	12.5	15.0	20.0	13.5	16.5	13.5	12.5	13.0	11.0	10.0	10.5
30	19.0	11.5	15.5	21.0	13.5	17.0	13.5	11.5	12.5	11.0	10.0	10.5
31	---	---	---	21.5	14.0	18.0	15.0	11.5	13.0	---	---	---
MONTH	19.0	7.5	12.5	21.5	10.5	15.0	23.5	11.5	16.5	16.5	9.0	12.0
YEAR	23.5	2.0	9.5									

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'13", long 122°35'11", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005, on right bank at Mayfield Dam on Cowlitz River 0.3 mi (0.5 km) downstream from Silver Creek, 4 mi (6.4 km) south of town of Silver Creek, and at mi 52.0 (83.7 km).

DRAINAGE AREA.--1,392 mi^2 (3,605 km^2).

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Mar. 5, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam, completed April 1962; storage began Apr. 14, 1962. Usable capacity, 21,380 acre-ft (26.4 hm^3) between elevation 415 ft (126.5 m), lower limit of operation, and 425 ft (129.5 m), top of taintor gates. Dead storage below elevation 415 ft (126.5 m), 112,340 acre-ft (139 hm^3). Crest of spillway is at elevation 385 ft (117.3 m). Water is used by city of Tacoma for power development. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,850 acre-ft (166 hm^3) Dec. 9, 1971, elevation, 425.50 ft (129.692 m); minimum since normal operating level was attained, 112,830 acre-ft (139 hm^3) June 4, 1969, elevation, 415.24 ft (126.565 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,764 acre-ft (165 hm^3) Sept. 17, elevation, 425.02 ft (129.546 m); minimum, 124,536 acre-ft (154 hm^3) Jan. 1, Feb. 21, elevation, 420.83 ft (128.269 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	423.55	130,480	
Oct. 31	423.60	130,590	+110
Nov. 30	423.66	130,722	+132
Dec. 31	421.55	126,095	-4,627
CAL YR 1976	-	-	+3,301
Jan. 31	423.52	130,414	+4,319
Feb. 28	423.50	130,370	-44
Mar. 31	424.35	132,265	+1,895
Apr. 30	423.79	131,017	-1,248
May 31	423.63	130,656	-361
June 30	424.37	132,311	+1,655
July 31	423.66	130,722	-1,589
Aug. 31	424.24	132,018	+1,296
Sept. 30	423.85	131,150	-868
WTR YR 1977	-	-	+670

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC										
14...	1110	1.0	44	7.1	9.1	1	10.5	B13	.03	.00
14...	1120	20	44	7.1	9.1	1	10.5	B23	.03	.01
14...	1130	50	44	7.2	9.1	1	11.1	B32	.03	.01
14...	1140	100	48	7.1	8.2	1	8.7	B2	.12	.00
APR										
12...	1120	1.0	44	7.5	11.6	1	12.2	B7	.34	.01
12...	1130	20	44	7.5	8.0	1	12.1	B36	.32	.01
12...	1140	50	46	7.4	6.7	1	11.9	B16	.29	.01
12...	1150	100	46	7.4	6.0	1	11.8	B10	.36	.01
JUN										
14...	1105	1.0	40	7.1	15.2	1	10.5	16	.27	.00
14...	1115	20	35	7.5	10.0	1	11.0	8	.18	.00
14...	1125	50	35	7.4	7.8	1	10.4	50	.17	.00
14...	1135	100	35	7.5	6.6	1	10.4	<4	.29	.00
SEP										
13...	1420	1.0	52	7.2	10.3	0	10.5	90	.07	.01
13...	1425	20	53	6.6	11.4	0	10.0	230	.09	.01
13...	1430	50	55	6.7	9.1	0	9.3	120	.12	.00
13...	1435	100	60	6.6	7.4	0	8.3	B33	.26	.00

B Results based upon colony counts outside the ideal range.

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA

LOCATION.--Lat 46°30'38", long 122°36'54", in SE¼NE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, on right bank, 1.1 mi (1.8 km) upstream from fish barrier dam, 1.4 mi (2.3 km) downstream from Mayfield Dam, 1.5 mi (2.4 km) upstream from Mill Creek, 2.1 mi (3.4 km) downstream from Winston Creek, and at mile 50.6 (81.4 km).

DRAINAGE AREA.--1,400 mi² (3,626 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1910, December 1910 to September 1911, October to November 1911 (monthly discharge only), April 1934 to current year. Published as "at Mayfield" 1910-11 and "near Mayfield" 1934-61.

REVISED RECORDS.--WSP 1318: 1949(M). WSP 1348: Drainage area. WSP 1718: 1943,1947.

GAGE.--Water-stage recorder. Datum of gage is 226.6 ft (69.07 m) above mean sea level. August 1910 to November 1911 nonrecording gage at site 2.5 mi (4.0 km) upstream at different datum. Apr. 27 to July 2, 1934, nonrecording gage at present site and datum.

REMARKS.--Water discharge records excellent. Flow regulated by Riffe Lake (see sta 14234800) at mile 65.5 (105.4 km) and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station.

AVERAGE DISCHARGE.--43 years (water years 1935-77), 6,345 ft³/s (179.7 m³/s), 61.55 in/yr (1,563 mm/yr), 4,597,000 acre-ft/yr (5,670 hm³/yr), adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft³/s (1,900 m³/s) Dec. 13, 1946, maximum gage height, 25.26 ft (7.699 m) Dec. 4, 1975; minimum, 37 ft³/s (1.05 m³/s) Apr. 16, 1962, gage height, 6.42 ft (1.957 m); minimum daily, 451 ft³/s (12.8 m³/s) Apr. 16, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 is known to have exceeded that of Dec. 13, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,600 ft³/s (300 m³/s) Jan. 9, gage height, 13.38 ft (4.078 m);; minimum, 1,700 ft³/s (48.1 m³/s) May 11, gage height, 9.14 ft (2.786 m); minimum daily, 1,840 ft³/s (52.1 m³/s) May 11, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2830	5150	9080	2880	5730	2990	3090	1910	1880	1890	2130	2100
2	2830	5310	9150	2850	6670	4010	3070	1910	1860	1890	2130	2130
3	2810	6270	9200	4550	7120	4490	3090	1890	1880	1910	2120	2130
4	3510	6630	9120	5730	6770	3950	3090	1910	2060	1910	2150	2130
5	3700	6860	8770	7150	3850	4350	3090	1910	1860	1910	2150	2120
6	4190	5640	7900	8670	2830	4480	3050	1910	1880	1910	2150	2130
7	4610	6010	6650	8720	3010	8610	3070	1910	1880	1890	2150	2130
8	5150	5760	6170	7420	3360	5100	3070	1920	1880	1910	2150	2130
9	5310	4980	5930	9200	2810	6300	3070	1890	1880	1910	2160	2130
10	5350	5520	5470	8850	2800	4820	3070	1850	1880	1910	2160	2130
11	4610	5520	4670	6220	2850	4470	2940	1840	1880	1890	2160	2150
12	4890	6400	4870	5210	2850	6010	2370	1850	1880	1910	2160	2150
13	5110	6200	5430	5030	2850	5820	2210	1860	1860	1890	2160	2130
14	5250	5400	4990	4890	2870	5880	1980	1850	1860	1890	2160	2130
15	6200	5160	4610	3580	2850	4440	1970	1860	1860	1890	2150	2130
16	6270	5460	4590	3040	2850	4320	1970	1860	1860	1890	2150	2120
17	6470	5500	5590	2880	2850	3690	1970	1860	1880	1890	2130	2130
18	6070	6460	3740	3810	2850	2850	1980	1860	1880	1910	2130	2120
19	5690	7550	4330	4790	2870	2830	2010	1850	1890	1890	2120	2130
20	5250	7930	6320	4690	2900	3170	2040	1850	1890	1910	2120	2120
21	5270	8070	4370	5490	2900	4350	2040	1850	1880	1910	2120	2120
22	5290	7590	4100	6370	2970	4080	2060	1850	1890	1940	2120	2120
23	5290	7400	2730	7450	3120	3410	2040	1850	1890	1970	2120	2120
24	5450	7850	2520	8300	2870	3780	2040	1840	1890	1950	2120	2120
25	5810	7600	2600	8070	2870	2930	2010	1860	1890	1970	2120	2130
26	5730	7500	2810	8300	2850	3740	1980	1860	1890	2030	2120	2130
27	6070	8920	2960	8270	2850	5010	1920	1860	1910	2090	2120	2130
28	6400	8850	3580	7800	2900	3040	1910	1860	1910	2090	2120	2130
29	6320	9120	3050	4950	---	3100	1890	1860	1910	2090	2120	2130
30	5550	9100	2850	4280	---	3230	1910	1860	1910	2090	2100	2130
31	5110	---	2860	5950	---	3120	---	1880	---	2090	2120	---
TOTAL	158390	201710	161010	185390	96870	133170	72000	57980	56650	60220	66190	63830
MEAN	5109	6724	5194	5980	3460	4296	2400	1870	1888	1943	2135	2128
MAX	6470	9120	9200	9200	7120	8610	3090	1920	2060	2090	2160	2150
MIN	2810	4980	2520	2850	2800	2830	1890	1840	1860	1890	2100	2100
AC-FT	314200	400100	319400	367700	192100	264100	142800	115000	112400	119400	131300	126600
†	-230,962	-276,410	-182,783	-196,310	-51,485	+15,375	+262,385	+282,747	+252,463	+6,051	-15,345	+33,858
MEAN‡	1,353	2,079	2,221	2,787	2,532	4,545	6,811	6,467	6,134	2,041	1,886	2,698
CFSM‡	0.97	1.48	1.59	1.99	1.81	3.25	4.86	4.62	4.38	1.46	1.35	1.93
IN.‡	1.11	1.66	1.83	2.30	1.88	3.74	5.43	5.33	4.89	1.68	1.55	2.15
AC-FT‡	83,240	123,700	136,600	171,400	140,600	279,500	405,200	397,700	364,900	125,500	116,000	160,500

CAL YR 1976: TOTAL 2,319,650 MEAN 6,338 MAX 27,500 MIN 2,390 AC-FT 4,601,000
DO.....: MEAN‡ 5,777 CFSM‡ 4.13 IN.‡ 56.13 AC-FT‡ 4,192,000
WTR YR 1977: TOTAL 1,313,410 MEAN 3,598 MAX 9,200 MIN 1,840 AC-FT 2,605,000
DO.....: MEAN‡ 3,460 CFSM‡ 2.47 IN.‡ 33.54 AC-FT‡ 2,505,000

† Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1950 to current year.

INSTRUMENTATION.--Temperature recorder since October 1950.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.0°C July 28, 29, 1958; minimum, 0.5°C Jan. 28 to Feb. 2, 1956.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 13.0°C June 9; minimum, 3.0°C Mar. 15, 27.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.5	11.0	10.5	10.0	10.0	10.0	10.0	10.0	7.5	7.5	7.5
2	11.5	10.0	10.5	10.5	10.5	10.5	10.0	9.5	9.5	7.5	7.5	7.5
3	11.5	10.0	10.5	10.5	10.0	10.0	9.5	9.5	9.5	7.5	7.5	7.5
4	11.0	11.0	11.0	10.5	10.0	10.0	9.5	9.5	9.5	7.5	7.0	7.0
5	11.5	10.5	11.0	10.5	10.5	10.5	9.5	9.5	9.5	7.0	7.0	7.0
6	11.0	11.0	11.0	10.5	10.5	10.5	9.5	9.5	9.5	7.0	6.5	6.5
7	11.0	10.0	10.5	10.5	10.5	10.5	9.5	9.5	9.5	6.5	6.5	6.5
8	11.0	10.5	10.5	10.5	10.5	10.5	9.5	9.5	9.5	6.5	6.5	6.5
9	11.0	10.5	10.5	10.5	10.5	10.5	9.5	9.5	9.5	6.5	6.5	6.5
10	11.0	10.5	10.5	10.5	10.5	10.5	9.5	9.5	9.5	6.5	6.5	6.5
11	11.0	10.5	10.5	10.5	10.5	10.5	9.5	9.5	9.5	7.0	6.5	6.5
12	11.0	10.0	10.5	10.5	10.5	10.5	9.5	9.5	9.5	7.0	6.5	6.5
13	10.5	10.0	10.5	10.5	10.5	10.5	9.5	9.5	9.5	7.0	7.0	7.0
14	10.5	10.0	10.5	10.5	10.5	10.5	9.5	9.5	9.5	7.0	7.0	7.0
15	10.5	10.0	10.0	10.5	10.5	10.5	9.0	9.0	9.0	7.0	7.0	7.0
16	10.5	10.0	10.0	11.0	10.5	11.0	9.0	9.0	9.0	7.0	7.0	7.0
17	10.5	10.0	10.0	11.0	11.0	11.0	9.0	9.0	9.0	7.0	7.0	7.0
18	10.5	10.0	10.0	11.0	10.5	11.0	9.0	9.0	9.0	7.0	7.0	7.0
19	10.5	10.0	10.5	10.5	10.5	10.5	9.0	9.0	9.0	7.0	7.0	7.0
20	10.5	10.0	10.5	10.5	10.5	10.5	9.0	8.5	9.0	7.0	7.0	7.0
21	10.0	10.0	10.0	10.5	10.5	10.5	9.0	8.5	9.0	7.0	7.0	7.0
22	10.0	10.0	10.0	10.5	10.0	10.5	8.5	8.5	8.5	7.0	7.0	7.0
23	10.0	10.0	10.0	10.5	10.5	10.5	8.5	8.5	8.5	7.0	6.5	7.0
24	10.0	10.0	10.0	10.5	10.5	10.5	8.5	8.5	8.5	7.0	6.5	6.5
25	10.0	10.0	10.0	10.5	10.0	10.5	8.5	8.0	8.5	6.5	6.5	6.5
26	10.0	10.0	10.0	10.5	10.5	10.5	8.5	8.0	8.5	6.5	6.5	6.5
27	10.0	10.0	10.0	10.5	10.0	10.0	8.5	8.0	8.0	6.5	6.5	6.5
28	10.0	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	6.5	6.0	6.5
29	10.5	10.0	10.0	10.0	10.0	10.0	8.0	8.0	8.0	6.5	6.0	6.0
30	10.0	10.0	10.0	10.0	9.5	10.0	8.0	8.0	8.0	6.0	6.0	6.0
31	10.0	10.0	10.0	---	---	---	8.0	7.5	7.5	6.0	6.0	6.0
MONTH	11.5	10.0	10.5	11.0	9.5	10.5	10.0	7.5	9.0	7.5	6.0	7.0

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	6.0	6.0	7.0	6.5	7.0	6.5	6.5	6.5	11.0	10.0	10.5
2	6.0	6.0	6.0	7.0	5.5	6.5	6.5	6.5	6.5	10.0	9.0	9.5
3	6.0	6.0	6.0	7.5	5.5	6.5	7.0	6.5	6.5	10.0	8.0	9.5
4	6.0	6.0	6.0	7.0	5.5	6.5	7.0	6.5	7.0	10.0	8.5	9.0
5	6.0	6.0	6.0	7.0	6.0	7.0	7.0	6.5	6.5	10.5	9.5	10.0
6	6.0	6.0	6.0	7.0	6.0	6.5	7.5	6.5	7.0	10.0	9.5	9.5
7	6.0	6.0	6.0	6.5	6.0	6.0	8.0	7.0	7.5	10.5	9.5	10.0
8	6.0	6.0	6.0	6.5	5.5	6.0	8.0	6.5	7.0	11.0	9.5	10.5
9	6.5	6.0	6.0	7.0	6.0	6.5	7.5	7.0	7.0	10.0	9.0	9.5
10	6.5	6.0	6.5	7.0	6.0	6.5	8.5	7.5	8.0	9.5	8.5	9.0
11	6.5	6.0	6.5	6.5	6.0	6.0	8.5	8.0	8.0	10.5	9.0	10.0
12	6.5	6.5	6.5	6.0	6.0	6.0	9.0	8.0	8.5	10.5	9.5	10.0
13	6.5	6.5	6.5	6.0	6.0	6.0	8.5	7.0	8.0	10.0	9.0	9.5
14	6.5	6.5	6.5	6.5	6.0	6.0	9.0	7.0	7.5	11.0	9.5	10.0
15	6.5	6.5	6.5	7.5	5.0	6.5	9.0	8.5	9.0	11.0	9.5	10.5
16	6.5	6.5	6.5	7.0	6.0	6.5	9.0	8.0	8.5	10.0	9.5	10.0
17	7.0	6.5	7.0	6.5	6.0	6.0	8.5	8.0	8.0	10.0	9.5	10.0
18	7.0	6.5	7.0	6.5	6.0	6.0	8.5	7.5	8.0	10.5	9.5	10.0
19	6.5	6.5	6.5	6.0	6.0	6.0	8.5	7.0	8.0	10.5	10.0	10.5
20	6.5	6.5	6.5	6.0	6.0	6.0	9.0	7.5	8.5	10.5	10.0	10.0
21	7.0	6.5	6.5	6.5	5.5	6.0	9.0	8.5	9.0	10.5	9.5	10.0
22	6.5	6.5	6.5	6.5	6.0	6.5	9.5	8.5	9.0	11.0	10.0	10.5
23	6.5	6.5	6.5	6.5	6.0	6.5	9.5	8.5	9.0	10.5	9.5	10.0
24	6.5	6.5	6.5	6.5	6.0	6.5	10.0	9.0	9.5	11.5	10.5	11.0
25	6.5	6.5	6.5	6.5	6.0	6.5	9.5	9.0	9.0	12.0	10.5	11.0
26	6.5	6.5	6.5	6.5	6.0	6.5	9.5	9.0	9.5	10.5	9.0	10.0
27	7.0	6.5	6.5	6.5	5.0	6.0	10.0	9.0	9.5	11.5	10.0	10.5
28	7.0	6.5	7.0	6.5	6.0	6.5	9.5	9.0	9.5	11.0	9.5	10.5
29	---	---	---	7.0	6.5	6.5	10.0	9.0	9.5	11.0	10.0	10.5
30	---	---	---	7.0	6.5	7.0	11.0	9.5	10.5	11.5	10.5	11.0
31	---	---	---	7.0	6.5	7.0	---	---	---	11.0	10.5	11.0
MONTH	7.0	6.0	6.5	7.5	5.0	6.5	11.0	6.5	8.0	12.0	8.0	10.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.5	9.0	10.0	13.5	12.0	12.5	14.0	11.0	12.5	12.0	10.5	11.0
2	11.5	9.0	10.5	12.5	10.5	11.5	13.5	12.0	12.5	11.5	11.0	11.5
3	11.5	10.5	11.0	12.5	12.0	12.5	13.0	11.0	12.0	12.0	11.5	11.5
4	11.5	10.5	11.0	12.5	11.5	12.0	13.0	11.0	12.0	12.0	10.5	11.5
5	12.0	11.5	11.5	12.5	11.5	12.0	13.5	11.0	12.5	12.0	10.5	11.0
6	12.0	10.5	11.0	13.0	11.5	12.0	13.5	10.0	12.0	12.0	11.0	11.5
7	12.0	10.5	11.0	12.5	11.5	12.0	12.5	10.5	11.5	12.0	11.0	11.5
8	13.0	10.5	11.5	12.5	11.0	12.0	12.5	10.5	11.5	11.5	10.5	11.0
9	15.0	12.5	13.0	12.0	11.0	11.5	13.5	11.0	12.5	12.0	11.0	11.5
10	14.5	11.0	12.5	12.5	11.5	12.0	12.5	11.5	12.5	12.0	11.0	11.5
11	13.0	11.0	12.0	12.5	11.5	12.0	13.5	11.5	12.5	12.5	10.5	11.5
12	12.5	11.5	12.0	12.5	11.0	11.5	13.0	12.0	12.5	12.0	11.5	11.5
13	12.5	11.0	12.0	12.5	11.0	11.5	12.5	11.0	12.0	12.0	11.0	11.5
14	13.0	11.0	12.0	11.5	10.5	11.0	13.0	11.0	12.0	11.5	10.0	10.5
15	12.5	11.0	12.0	12.0	10.5	11.0	12.0	11.0	11.5	12.0	10.5	11.0
16	12.5	11.5	12.0	12.0	10.0	11.0	13.0	11.0	12.0	11.5	11.0	11.5
17	13.0	11.5	12.5	12.0	11.0	11.0	13.0	11.5	12.0	12.0	11.0	11.5
18	13.0	11.0	12.0	12.0	11.5	11.5	12.5	10.5	11.5	11.5	11.0	11.5
19	13.0	12.0	12.5	12.5	11.0	11.5	12.0	11.0	11.5	11.5	10.5	11.0
20	13.0	11.5	12.0	12.5	11.0	11.5	11.5	10.0	11.0	11.0	10.0	10.0
21	13.0	12.0	12.5	12.5	11.0	11.5	11.5	10.0	11.0	11.0	9.5	10.5
22	12.5	11.0	12.0	12.0	10.5	11.5	12.0	11.0	11.5	11.0	11.0	11.0
23	13.5	11.5	12.0	12.5	10.5	11.5	11.5	10.5	11.5	11.0	10.5	10.5
24	13.0	11.5	12.5	13.0	11.0	12.0	11.0	10.5	10.5	10.5	10.0	---
25	12.5	11.0	12.0	13.0	10.5	12.0	11.5	10.5	11.0	11.5	10.5	11.0
26	13.5	11.5	12.0	12.5	11.0	12.0	11.5	10.0	10.5	11.5	10.0	10.5
27	13.0	11.0	12.0	12.5	11.0	11.5	11.5	10.0	11.0	10.5	10.0	10.0
28	13.5	11.5	12.5	12.0	10.5	11.5	12.0	10.5	11.0	10.5	10.0	10.5
29	14.0	11.0	12.0	12.5	10.5	11.5	11.0	10.0	10.5	10.5	10.0	10.5
30	14.0	12.0	13.0	12.5	11.0	12.0	11.5	10.0	11.0	10.5	10.0	10.5
31	---	---	---	13.0	11.5	12.0	11.5	10.0	11.0	---	---	---
MONTH	15.0	9.0	12.0	13.5	10.0	11.5	14.0	10.0	11.5	12.5	9.5	11.0
YEAR	15.0	5.0	9.5									

14238010 COWLITZ RIVER ABOVE MILL CREEK HATCHERY NEAR SALKUM, WA

LOCATION.--Lat 46°30'34", long 122°37'07", in NE¼SE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site about 2,000 ft (610 m) below gage and 1,000 ft (305 m) above fish barrier dam.

PERIOD OF RECORD.--Water years 1974 to September 1977 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC 1976											
14...	1205	4990	47	7.6	9.4	1	11.1	60	6	.03	.01
APR 1977											
12...	1245	2380	47	7.8	9.3	1	13.3	83	1	.30	.01
JUN											
14...	1230	1860	48	7.1	11.4	1	11.6	260	6	.12	.00
SEP											
13...	1615	2130	50	7.0	12.5	0	11.1	140	3	.09	.01

14238020 COWLITZ RIVER BELOW MILL CREEK HATCHERY NEAR SALKUM, WA

LOCATION.--Lat 46°30'31", long 122°37'15", in NW¼SE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site about 1,000 ft (305 m) below fish barrier dam.

PERIOD OF RECORD.--Water years 1974 to current year.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC 1976											
14...	1225	4990	47	7.5	9.4	1	12.1	60	1	.04	.01
APR 1977											
12...	1220	2380	46	7.7	9.3	1	12.7	87	0	.30	.02
JUN											
14...	1210	1860	48	7.1	10.8	1	11.5	B26	3	.12	.00
SEP											
13...	1235	2130	53	6.9	13.2	0	11.2	B170	10	.09	.01

14238550 COWLITZ RIVER ABOVE BLUE CREEK NEAR TOLEDO, WA

LOCATION.--Lat 46°29'02", long 122°43'47", in SE¼NW¼ sec.31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, 0.5 mi (0.8 km) upstream from Blue Creek and 6.2 mi (10.0 km) northeast of Toledo.

PERIOD OF RECORD.--Water years 1974 to current year.

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC 1976											
14...	1135	5500	47	7.6	9.4	1	12.1	B49	3	.02	.01
APR 1977											
12...	1145	2710	45	8.0	11.6	1	13.3	<1	1	.27	.01
JUN											
14...	1145	1850	49	7.2	13.4	1	11.9	210	4	.09	.00
SEP											
13...	1200	2130	54	6.8	13.8	0	11.2	B500	4	.09	.01

14238800 COWLITZ RIVER AT TOLEDO, WA

LOCATION.--Lat 46°26'19", long 122°50'35", in SW¼NW¼ sec.17, T.11 N., R.1 W., Lewis County, Hydrologic Unit 17080005, on right bank, at State Highway 505 bridge in Toledo, and at mile 33.7 (54.2 km).

DRAINAGE AREA.--1,461 mi² (3,784 km²).

PERIOD OF RECORD.--June to November 1977 (discontinued). Chemical analyses 1975 water year.

GAGE.--Water-stage recorder. Datum of gage is 85.84 ft (26.164 m) above mean sea level.

REMARKS.--Records good. Flow regulated by Riffe Lake (see sta 14234800) at mile 65.5 (105.4 km) and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station.

EXTREMES FOR CURRENT PERIOD.--June to September 1977: Maximum discharge during period, 2,690 ft³/s (76.2 m³/s) June 1, gage height, 5.17 ft (1.576 m); minimum, 1,770 ft³/s (50.1 m³/s) July 13, 22, gage height, 4.71 ft (1.436 m).

October to November 1977: Maximum discharge during period, 23,400 ft³/s (663 m³/s) Nov. 26, gage height, 11.48 ft (3.499 m); minimum, 2,070 ft³/s (58.6 m³/s) Oct. 20, gage height, 4.86 ft (1.481 m).

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE 1977 TO NOVEMBER 1977

DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
1				2550	1830	2060	2110	2140	4360			
2				2220	1840	2070	2120	2130	7050			
3				2130	1850	2070	2120	2130	9500			
4				2300	1860	2070	2190	2130	9480			
5				2160	1860	2090	2140	2130	9510			
6				2030	1850	2080	2140	2120	9610			
7				1990	1820	2090	2110	2120	9860			
8				1960	1820	2090	2120	2120	10600			
9				1950	1840	2100	2130	2110	10600			
10				1920	1840	2110	2110	2130	10700			
11				1910	1840	2110	2130	2130	10700			
12				1900	1850	2110	2130	2120	10600			
13				1860	1830	2110	2120	2110	10700			
14				1860	1830	2110	2120	2110	10900			
15				1850	1830	2120	2120	2130	10400			
16				1840	1830	2090	2100	2140	10700			
17				1840	1830	2080	2120	2140	10700			
18				1840	1840	2090	2120	2110	11200			
19				1850	1820	2090	2170	2110	13600			
20				1850	1830	2090	2160	2230	13700			
21				1840	1820	2090	2140	3000	13600			
22				1830	1820	2090	2130	3020	13100			
23				1830	1900	2160	2160	3060	16400			
24				1840	1870	2160	2200	3080	19900			
25				1830	1880	2120	2240	3080	18900			
26				1830	1920	2120	2200	3060	22100			
27				1840	2030	2110	2150	3030	19200			
28				1840	2030	2100	2160	3040	19000			
29				1830	2030	2160	2160	3090	19000			
30				1840	2010	2200	2140	3190	18500			
31				---	2020	2120	---	3850	---			
TOTAL				58160	58070	65260	64260	77090	384970			
MEAN				1939	1873	2105	2142	2487	12830			
MAX				2550	2030	2200	2240	3850	22100			
MIN				1830	1820	2060	2100	2110	4360			
AC-FT				115400	115200	129400	127500	152900	763600			
†				+252,463	+6,051	-15,345	+33,858	-16,630	-55,867			
MEAN‡				6,184	1,972	1,855	2,713	2,216	11,900			
CFSM‡				4.23	1.35	1.27	1.86	1.52	8.15			
IN.‡				4.72	1.56	1.46	2.07	1.75	9.08			
AC-FT‡				367,900	121,300	114,100	161,400	136,300	707,700			

† Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14239050 COWLITZ RIVER NEAR TOLEDO, WA

LOCATION.--Lat 46°24'55", long 122°53'20", in NE¼NE¼ sec.26, T.11 N., R.2 W., Lewis County, Hydrologic Unit 17080005, at bridge on U.S. Highway 99, 2.2 mi (3.5 km) upstream from Lacamas Creek, 2.3 mi (3.7 km) downstream from Salmon Creek, 2.5 mi (4.0 km) southwest of Toledo and at river mile 29.9 (48.1 km).

PERIOD OF RECORD.--Water years 1962-66, 1974 to September 1977 (discontinued).

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	SUSPENDED SOLIDS (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
DEC 1976											
14...	1040	5480	67	7.3	9.0	1	12.1	40	1	.03	.01
APR 1977											
12...	1055	2690	71	7.5	6.6	1	12.1	B10	1	.25	.01
JUN											
14...	1025	1870	81	7.1	12.6	1	10.3	310	7	.09	.00
SEP											
13...	1050	2110	114	7.1	12.0	0	10.5	B130	6	.09	.01

B Results based upon colony counts outside the ideal range.

14242500 TOUTLE RIVER NEAR SILVER LAKE, WA

LOCATION.--Lat 46°20'11", long 122°43'27", in NW¼SE¼ sec.19, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank, 0.8 mi (1.3 km) downstream from confluence of North and South Forks, 4.9 mi (7.9 km) northeast of Silver Lake, and at mile 16.4 (26.4 km).

DRAINAGE AREA.--474 mi² (1,228 km²).

PERIOD OF RECORD.--September 1909 to August 1912, October 1919 to October 1921, May 1922 to December 1925, September 1929 to current year. Published as "near Castle Rock" 1909-12. Water temperatures October 1950 to September 1962, October 1965 to September 1972.

REVISED RECORDS.--WSP 292: 1909. WSP 754: 1930-32. WSP 1346: 1910(M), 1930-32(M), 1941.

GAGE.--Water-stage recorder. Datum of gage is 407.3 ft (124.15 m) above mean sea level (river-profile survey). Prior to Aug. 4, 1912, nonrecording gage at site 2.0 mi (3.2 km) downstream at datum 307.3 ft (93.67 m) above mean sea level, unadjusted. Oct. 9, 1919, to Dec. 18, 1925, water-stage recorder at site 300 ft (91 m) downstream at different datum. Sept. 25, 1929, to Apr. 17, 1952, water-stage recorder at two sites within 50 ft (15 m) of present site at present datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--53 years (water years 1910-11, 1920-21, 1925, 1930-77) 2,063 ft³/s (58.42 m³/s) 59.10 in/yr (1,501 mm/yr), 1,495,000 acre-ft/yr (1,840 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s (1,080 m³/s) Jan. 20, 1972, gage height, 20.90 ft (6.370 m), from rating curve extended above 26,000 ft³/s (736 m³/s) on basis of slope-area measurement of peak flow; maximum gage height recorded, 22.7 ft (6.92 m) Dec. 23, 1933; minimum discharge, 240 ft³/s (6.80 m³/s) Nov. 21, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (255 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0300	*5,420	153	*5.35	1.631

Minimum discharge, 315 ft³/s (8.92 m³/s) Aug. 18, 19, gage height, 1.35 ft (0.411 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	496	1480	520	916	671	2580	3150	1880	4520	720	405	840
2	502	1180	514	856	615	2330	2620	2200	3620	720	399	690
3	532	952	508	808	580	2770	2450	2850	3030	720	388	605
4	508	864	502	752	562	2300	2280	2870	3240	720	388	1250
5	493	792	496	699	556	1890	2370	2690	2990	736	388	1670
6	478	752	496	857	550	1760	2690	2440	2840	720	380	1250
7	472	692	550	836	538	2100	3240	2280	2690	692	377	979
8	460	650	622	808	526	3500	3710	2770	2420	650	361	720
9	460	636	616	596	520	4770	3120	2520	2060	636	350	684
10	478	618	692	601	629	3510	2950	2400	1820	629	350	615
11	601	586	643	629	699	2810	2230	2340	1700	608	345	574
12	514	583	615	692	713	2970	1990	2040	1600	615	345	544
13	484	568	601	728	792	2660	2160	1850	1670	596	350	520
14	486	556	580	699	720	2440	2050	1840	1400	568	335	502
15	460	567	574	720	671	2260	1920	1850	1360	538	335	496
16	456	720	574	869	650	2020	2060	1880	1260	530	330	502
17	440	766	568	925	629	1780	1940	2450	1200	538	335	496
18	445	943	615	934	608	1710	1780	2310	1170	538	325	502
19	440	784	587	1080	587	1820	1650	2060	1190	514	325	650
20	435	720	562	952	596	1740	1490	1900	1100	502	335	980
21	430	671	550	872	792	1650	1460	1900	1050	484	345	1530
22	430	629	544	816	1180	1660	1610	1820	1020	470	340	1210
23	430	608	664	768	1060	1970	1790	1780	979	466	388	1240
24	470	587	706	728	880	2020	2110	1820	925	454	952	2030
25	1020	622	671	699	872	1880	2550	1670	889	449	622	2090
26	1170	594	1050	678	1020	1790	2550	2020	864	454	671	1870
27	832	562	2420	650	1140	3010	2150	2110	824	443	562	1490
28	744	544	1730	629	2210	2920	1980	2280	803	432	526	1320
29	744	538	1380	608	---	2660	1970	2080	792	432	752	1250
30	692	532	1170	596	---	2320	1900	1910	760	421	2050	1180
31	979	---	1010	608	---	2290	---	2950	---	416	1100	---
TOTAL	17575	21251	24338	23025	21564	73870	67840	67630	51523	17449	15542	30362
MEAN	567	708	785	743	770	2383	2261	2182	1717	563	501	1012
MAX	1170	1480	2420	1080	2210	4770	3710	2950	4520	736	2050	2090
MIN	430	532	496	596	520	1650	1460	1670	760	416	325	496
CFSM	1.20	1.49	1.66	1.57	1.62	5.03	4.77	4.60	3.62	1.19	1.06	2.14
IN.	1.38	1.67	1.91	1.81	1.69	5.80	5.32	5.31	4.04	1.37	1.22	2.38
AC-FT	34860	42150	48260	45670	42770	146500	134600	134100	102200	34610	30830	60220

CAL YR 1976 TOTAL 642010 MEAN 1754 MAX 14900 MIN 430 CFSM 3.70 IN 50.39 AC-FT 1273000
WTR YR 1977 TOTAL 431961 MEAN 1183 MAX 4770 MIN 325 CFSM 2.50 IN 33.90 AC-FT 856800

14243000 COWLITZ RIVER AT CASTLE ROCK, WA

LOCATION.--Lat 46°16'30", long 122°54'48", in SW¼SE¼ sec.10, T.9 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 40 ft (12 m) downstream from Arkansas Valley Road bridge in Castle Rock, 2.7 mi (4.3 km) downstream from Toutle River and at mile 17.3 (27.8 km).

DRAINAGE AREA.--2,238 mi² (5,796 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--December 1926 to current year.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1638: 1947(P), 1951.

CORRECTIONS.--WRD Wash 1974: 1973 adjusted figures.

GAGE.--Water-stage recorder. Datum of gage is 20.20 ft (6.157 m) above mean sea level. Prior to Dec. 18, 1933, nonrecording gage at site 2 mi (3.2 km) upstream at datum 14.93 ft (4.551 m) higher. Dec. 18, 1933, to June 13, 1934, nonrecording gage and June 14 to Sept. 30, 1934, water-stage recorder, at present site at datum 5 ft (1.5 m) higher.

REMARKS.--Water-discharge records excellent. Flow regulated by Riffe Lake (see sta 14234800) at mile 63.3 (101.4 km), and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station.

AVERAGE DISCHARGE.--50 years, 9,289 ft³/s (263.1 m³/s), 56.36 in/yr (1,432 mm/yr), 6,730,000 acre-ft/yr (8,300 hm³/yr), adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 139,000 ft³/s (3,940 m³/s) Dec. 23, 1933, gage height, 31.6 ft (9.63 m) present datum, from rating curve extended above 80,000 ft³/s (2,270 m³/s); minimum, 998 ft³/s (28.3 m³/s) Nov. 7, 8, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,000 ft³/s (425 m³/s) Mar. 10, gage height, 12.50 ft (3.810 m); minimum, 2,420 ft³/s (68.5 m³/s) July 22, 23, gage height, 8.63 ft (2.630 m); minimum daily, 2,450 ft³/s (69.4 m³/s) July 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3650	6770	8940	4080	6350	7010	6740	3930	6770	2700	2580	3240
2	3650	6290	9220	3980	7120	6890	6440	4190	6690	2680	2600	3040
3	3660	6490	9150	4520	7280	8140	6020	4910	5690	2700	2580	3020
4	3810	7070	9120	6320	7580	7850	5780	5210	5910	2750	2580	3500
5	4160	7540	9010	7160	5480	7040	5780	5180	5660	2750	2600	3980
6	4370	6050	8140	8630	3830	6620	6110	4850	5150	2730	2600	3430
7	5000	6620	7210	9290	3730	10100	6500	4610	4940	2650	2600	3200
8	5120	6440	6800	7460	4050	11500	7010	5390	4610	2600	2600	3070
9	5660	5810	6800	8150	3700	14100	6620	4970	4190	2580	2600	2990
10	5780	5810	6620	9050	3650	12300	6020	4610	3930	2580	2600	2920
11	5690	6110	5660	7850	3850	8660	5630	4550	3780	2580	2570	2880
12	5890	6590	5270	4870	3830	9190	4880	4220	3600	2600	2580	2850
13	5540	6800	6050	6350	3930	10500	4790	3980	3550	2580	2580	2810
14	5600	6110	5780	5570	3800	9500	4490	3930	3500	2550	2580	2700
15	6260	5960	5480	4940	3700	8310	4250	3850	3430	2550	2580	2780
16	6530	5960	5600	4760	3750	7460	4480	4030	3350	2530	2560	2790
17	6710	6080	5870	4370	3700	6770	4370	5030	3250	2530	2540	2770
18	6530	7280	5120	4550	3700	5330	4130	4910	3230	2550	2560	2810
19	6350	7610	4520	4020	3680	5330	3980	4460	3200	2580	2540	3040
20	5870	8420	6350	3960	3700	5270	3850	4100	3150	2480	2560	3460
21	5620	8260	5480	6500	3950	5490	3800	4000	3100	2450	2570	4100
22	5840	8620	5030	6350	4470	6530	3800	3930	3080	2450	2580	3710
23	5690	7670	4160	8730	4800	6620	4000	3850	3000	2500	2860	3840
24	5930	7790	3700	8210	4310	6410	4250	3930	2930	2480	3290	4630
25	6470	8210	3600	8730	4190	5930	4700	3830	2900	2480	3050	4910
26	6920	7740	4470	4450	4640	5570	4760	4080	2850	2500	3900	4630
27	6860	8520	4230	4560	4410	9260	4360	4250	2830	2600	2910	4020
28	6500	8910	5510	4450	4110	7820	4050	4370	2800	2600	2820	3780
29	7160	9150	5240	6590	---	6660	4000	4310	2750	2500	3060	3710
30	6290	9120	4430	5540	---	6290	3950	4180	2730	2550	4380	3420
31	6140	---	4190	5600	---	5900	---	5240	---	2580	3730	---
TOTAL	173870	216590	188450	206890	127940	239970	149520	136680	110820	79960	85610	102010
MEAN	5609	7220	6079	6674	4569	7741	4984	4409	3694	2579	2762	3400
MAX	7160	9150	9220	9290	7580	14100	7010	5390	6770	2750	4380	4910
MIN	3650	5810	3600	3960	3650	5270	3800	3830	2730	2450	2540	2770
AC-FT	344900	429600	373800	410400	253800	476000	296600	271100	219800	158600	169800	202300
*	-230,962	-276,410	-182,783	-196,310	-51,485	+15,375	+262,385	+282,747	+252,463	+6,051	-15,345	+33,858
MEAN‡	1,852	2,575	3,106	3,481	3,643	7,990	9,397	9,011	8,207	2,678	2,512	3,971
CFSM‡	0.83	1.15	1.39	1.56	1.63	3.57	4.20	4.03	3.67	1.20	1.12	1.77
IN‡	0.95	1.28	1.60	1.79	1.69	4.12	4.68	4.64	4.09	1.38	1.29	1.98
AC-FT‡	113,900	153,200	191,000	214,100	202,300	491,400	559,000	554,200	488,200	164,700	154,500	236,200

CAL YR 1976: TOTAL 3,139,590 MEAN 8,578 MAX 51,300 MIN 3,110 AC-FT 6,227,000
DO......: MEAN‡ 8,017 CFSM‡ 3.58 IN‡ 48.74 AC-FT‡ 5,818,000
WTR YR 1977: TOTAL 1,826,510 MEAN 5,004 MAX 14,100 MIN 2,450 AC-FT 3,623,000
DO......: MEAN‡ 4,866 CFSM‡ 2.17 IN‡ 29.52 AC-FT‡ 3,527,000

* Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14243000 COWLITZ RIVER AT CASTLE ROCK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1950 to September 1973.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT							
06...	1110	6650	69	7.1	12.1	--	6
20...	0935	5840	84	7.6	9.2	13	2
NOV							
04...	1135	7250	76	7.3	10.1	25	6
18...	0920	8640	76	7.7	9.7	13	7
DEC							
09...	0905	6690	73	7.6	8.6	25	3
16...	1305	5030	85	7.6	5.0	8	2
JAN							
06...	0945	7640	66	7.5	5.0	13	2
20...	1210	5870	69	7.3	7.0	21	7
FEB							
10...	0945	3660	85	8.0	7.0	17	3
17...	1115	3700	80	7.5	8.9	25	3
MAR							
10...	1015	12700	68	7.2	6.0	65	15
24...	1005	6650	76	7.6	7.2	42	6
APR							
07...	0950	6530	59	7.2	9.6	17	6
21...	1135	3700	72	6.5	10.7	25	2
MAY							
05...	0745	5300	68	7.3	8.6	33	6
19...	1120	6600	65	6.5	12.5	46	5
JUN							
09...	0825	4250	60	7.6	13.9	21	2
23...	0925	3000	82	7.5	16.6	42	2
JUL							
14...	0840	2550	150	8.5	13.9	13	3
28...	0930	2600	102	7.5	15.8	33	7
AUG							
11...	0830	2500	117	7.6	19.1	29	8
25...	0850	3050	117	7.1	13.7	100	169
SEP							
15...	1010	2000	110	6.9	13.7	33	9
29...	0840	3700	90	7.3	12.1	33	7

DATE	DISSOLVED OXYGEN (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
OCT							
06...	10.8	.00	.00	.02	.10	.01	.00
20...	10.7	.00	.01	.06	.12	.01	.00
NOV							
04...	11.0	.03	.00	.03	.09	.01	.00
18...	10.6	.02	.00	.03	.11	.02	.00
DEC							
09...	11.6	.06	.00	.03	.09	.01	.00
16...	11.6	.03	.00	.02	.05	.01	.00
JAN							
06...	12.2	.19	.01	.03	.19	.02	.00
20...	12.0	.11	.00	.05	.17	.02	.00
FEB							
10...	11.7	.09	.01	.06	.26	.02	.00
17...	11.9	.07	.01	.08	.20	.02	.00
MAR							
10...	12.2	.07	.01	.08	.28	.05	.00
24...	11.9	.25	.01	.16	.61	.03	.00
APR							
07...	11.0	.10	.00	.03	.26	.02	.00
21...	11.2	.13	.00	.03	.15	.02	.00
MAY							
05...	11.6	.16	.00	.06	.18	.03	.00
19...	11.2	.19	.01	.06	.24	.02	.00
JUN							
09...	10.7	.07	.00	.06	.16	.02	.00
23...	10.2	.05	.00	.06	.13	.02	.00
JUL							
14...	10.0	.10	.00	.07	.13	.02	.01
28...	9.3	.09	.01	.09	.17	.03	.00
AUG							
11...	9.1	.06	.00	.07	.19	.06	.00
25...	9.0	.11	.02	.13	.26	.06	.01
SEP							
15...	10.2	.01	.01	.07	.25	.03	.01
29...	10.5	.12	.00	.07	.23	.06	.00

14245000 COWEMAN RIVER NEAR KELSO, WA

LOCATION.--Lat 46°07'42", long 122°50'14", in SE¼SW¼ sec.32, T.8 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 3.4 mi (5.5 km) southeast of Kelso High School, 3.9 mi (6.3 km) downstream from Goble Creek, and at mile 7.5 (12.1 km).

DRAINAGE AREA.--119 mi² (308 km²).

PERIOD OF RECORD.--July 1950 to current year. Chemical analyses, see REMARKS. Water temperatures July 1950 to September 1972.

GAGE.--Water-stage recorder. Altitude of gage is 30 ft (9 m), from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station. Chemical analyses for the period October 1961 to September 1972, October 1974 to September 1975 collected at site 4.7 mi (7.6 km) downstream, published as 14245000 prior to October 1974 and 14245100 "at Kelso" thereafter.

AVERAGE DISCHARGE.--27 years, 430 ft³/s (12.18 m³/s), 49.07 in/yr (1,246 mm/yr), 311,500 acre-ft/yr (384 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,720 ft³/s (275 m³/s) Nov. 20, 1962, gage height, 14.10 ft (4.298 m) from rating curve extended above 3,900 ft³/s (110 m³/s) on basis of slope-area measurement at gage height 12.8 ft (3.90 m); minimum, 22 ft³/s (0.62 m³/s) Sept. 22, 1951; minimum gage height, 2.54 ft (0.774 m) Aug. 14, 15, 1975.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 24, 1950, reached a stage of 12.8 ft (3.90 m) from floodmarks, discharge, 7,730 ft³/s (219 m³/s) by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 9	0200	*1,600	45.3	*6.44	1.963

Minimum discharge, 39 ft³/s (1.10 m³/s) Aug. 17, 18, 19, gage height, 2.71 ft (0.826 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	232	62	117	106	997	540	151	1060	86	51	123
2	54	136	60	109	88	787	520	270	779	89	50	94
3	62	102	58	100	81	970	480	370	605	92	49	97
4	56	87	58	93	78	712	440	410	587	102	48	202
5	53	79	57	87	77	520	410	424	486	100	47	209
6	52	73	57	78	75	429	480	435	408	88	46	138
7	51	67	64	74	74	551	560	380	346	82	45	106
8	49	65	79	68	72	846	580	530	304	78	44	90
9	48	64	124	66	71	1390	450	443	273	76	42	80
10	51	61	93	64	94	992	380	372	245	78	42	74
11	53	60	83	70	98	737	320	327	225	74	41	69
12	51	58	78	88	122	822	265	278	213	78	41	66
13	50	57	74	105	142	749	289	246	200	79	40	63
14	48	56	71	120	122	676	269	241	187	75	40	61
15	48	62	69	130	110	627	264	263	175	70	42	62
16	48	82	67	155	104	546	273	301	163	68	41	68
17	48	84	66	145	100	461	250	405	154	70	40	65
18	47	117	69	145	93	414	233	385	143	73	39	75
19	46	83	64	145	89	412	218	328	140	67	39	151
20	45	76	62	132	90	379	209	285	134	64	41	167
21	45	70	61	120	141	352	203	272	137	62	43	215
22	45	67	60	110	284	369	203	243	130	60	44	165
23	46	64	79	102	263	423	197	233	120	59	77	291
24	48	63	78	95	212	435	203	237	111	57	233	406
25	169	82	97	92	212	399	215	222	106	56	109	492
26	134	72	381	89	289	412	223	297	100	58	133	397
27	77	65	463	89	316	820	190	306	97	57	84	276
28	69	62	278	88	804	680	174	331	94	56	87	221
29	74	63	206	84	---	580	164	329	91	57	142	219
30	63	70	161	78	---	520	157	303	89	54	496	236
31	133	---	133	84	---	460	---	612	---	53	195	---
TOTAL	1915	2379	3412	3122	4407	19447	9359	10245	7902	2218	2511	4978
MEAN	61.8	79.3	110	101	157	627	312	330	263	71.5	81.0	166
MAX	169	232	463	155	804	1390	580	612	1060	102	496	492
MIN	45	56	57	64	71	349	157	151	89	53	39	61
CFSM	.52	.67	.92	.85	1.32	5.27	2.62	2.77	2.21	.60	.68	1.40
IN.	.60	.74	1.07	.98	1.38	6.08	2.93	3.20	2.47	.69	.78	1.56
AC-FT	3800	4720	6770	6190	8740	38570	18560	20320	15670	4400	4980	9870

CAL YR 1976 TOTAL 120903 MEAN 330 MAX 3700 MIN 45 CFSM 2.77 IN 37.79 AC-FT 239800
WTR YR 1977 TOTAL 71895 MEAN 197 MAX 1390 MIN 39 CFSM 1.66 IN 22.47 AC-FT 142600

14247400 COLUMBIA RIVER AT BRADWOOD, OR

LOCATION.--Lat 46°11'45", long 123°25'50", in SW¼NE¼ sec.9, T.8 N., R.6 W., Clatsop County, Hydrologic Unit 17080003, and at mile 38.9 (62.6 km).

DRAINAGE AREA.--257,100 mi² (665,900 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--No discharge records available.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	DIS-SOLVED OXYGEN (MG/L)	CHEM-ICAL OXYGEN DEMAND (LOW LEVEL) (MG/L)	FECAL COLI-FORM .7UM-MF (COL./100 ML)	FECAL STREP-TOCOCCI KF AGAR (COL. PER 100 ML)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)
OCT											
05...	1430	148	7.8	17.5	9.1	26	--	84	6.7	76	.10
21...	1400	153	7.7	14.4	10.0	3	B32	39	7.2	83	.11
DEC											
07...	1200	164	7.2	8.0	9.9	7	190	110	9.5	92	.13
JAN											
06...	1200	173	8.2	3.8	12.6	15	310	--	9.4	107	.15
28...	1200	180	--	--	--	28	--	--	9.4	104	.14
MAR											
01...	1300	161	7.8	5.4	12.8	18	84	B13	8.7	105	.14
31...	1300	156	7.6	7.5	12.6	--	180	--	8.5	92	.13
APR											
29...	1200	168	8.1	12.6	11.0	10	87	--	6.3	118	.16
MAY											
26...	1100	165	8.4	13.5	--	10	55	75	6.0	105	.14
JUL											
05...	1200	144	8.3	18.5	8.9	20	81	88	5.1	77	.10
AUG											
01...	1315	148	8.1	21.5	8.6	9	--	--	3.6	80	.11
SEP											
08...	1200	144	7.3	19.7	8.6	13	>400	B19	7.9	79	.11

DATE	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)
OCT										
05...	3	.10	.01	.30	.40	.04	--	<10	0	20
21...	9	.15	.10	.32	.47	.03	1	<10	0	10
DEC										
07...	13	.22	.00	.35	.57	.05	1	<10	0	<10
JAN										
06...	10	.27	.01	.35	.62	.04	2	<10	0	<10
28...	8	.27	.01	.06	.33	.06	1	<10	0	20
MAR										
01...	0	.37	.06	.45	.82	.02	3	<10	10	<10
31...	6	.23	.04	.32	.55	.04	0	<10	0	20
APR										
29...	13	.09	.01	.50	.59	.03	2	<10	0	20
MAY										
26...	10	.01	.03	.62	.63	.07	1	<10	0	<10
JUL										
05...	12	.01	.03	.08	.09	.04	1	<10	10	<10
AUG										
01...	33	.03	.00	.57	.60	.04	2	<10	5	30
SEP										
08...	3	.13	.00	.23	.36	.04	0	10	0	10

B Results based upon colony counts outside the ideal range.

14247400 COLUMBIA RIVER AT BRADWOOD, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	CHLORO-PHYLL A (UG/L)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLORO-PHYLL B (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)
OCT										
05...	270	<100	.0	0	20	1.5	5.01	--	.000	--
21...	240	<100	1.1	0	20	1.7	10.3	--	1.01	--
DEC										
07...	270	<100	.0	0	20	1.8	2.49	--	.819	--
JAN										
06...	200	<100	.0	0	40	1.6	--	.030	--	.000
28...	410	<100	.1	1	30	1.7	--	--	--	--
MAR										
01...	330	<100	.2	0	30	2.0	--	--	--	--
31...	250	<100	.4	0	30	2.6	--	1.09	--	.033
APR										
29...	190	<100	.0	0	20	2.5	2.84	--	.607	--
MAY										
26...	300	<100	.0	0	30	2.8	.867	--	.481	--
JUL										
05...	390	<100	.0	0	20	2.1	18.3	--	1.30	--
AUG										
01...	420	<100	.0	1	30	2.6	2.86	--	.360	--
SEP										
08...	220	<100	.0	0	50	--	--	--	--	--

DATE	TIME	TOTAL CAL-CIUM (CA) (MG/L)	TOTAL MAG-NE-SIUM (MG) (MG/L)	TOTAL SODIUM (NA) (MG/L)	TOTAL PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	OIL AND GREASE (MG/L)
OCT										
21...	1400	--	--	--	--	68	0	8.9	4.7	0
JAN										
28...	1200	19	5.7	8.4	1.4	--	--	17	5.6	0
APR										
29...	1200	19	5.2	6.3	1.2	79	0	14	5.0	0
AUG										
01...	1315	16	4.3	6.0	1.2	63	0	10	4.9	0

14247500 ELOCHOMAN RIVER NEAR CATHLAMET, WA

LOCATION.--Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, Hydrologic Unit 17080003, at former gaging station, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).

DRAINAGE AREA.--65.8 mi² (170.4 km²).

PERIOD OF RECORD.--Water years 1950-71, 1973, 1976 to September 1977 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1950 to September 1973.

REMARKS.--Prior to 1960 published as "Elokomin River."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT									
04...	1630	43	80	7.2	12.8	--	4	10.4	.14
16...	1800	29	91	7.3	9.5	25	4	10.5	.17
NOV									
02...	1430	151	66	7.3	11.2	38	3	10.8	1.1
16...	1345	136	71	7.3	10.5	65	3	10.6	.34
DEC									
07...	1430	103	87	7.4	7.5	38	1	12.3	.38
14...	1325	115	75	7.4	6.6	25	2	12.5	.63
JAN									
04...	1440	137	74	7.4	4.0	20	1	13.1	.70
18...	1400	265	58	7.3	8.2	38	6	11.6	.75
FEB									
08...	1540	98	75	7.7	6.6	17	1	12.0	.49
15...	1430	189	71	7.5	7.2	33	1	12.0	.90
MAR									
08...	1510	1060	56	7.0	6.7	50	10	11.5	.92
22...	1435	346	50	7.3	8.3	17	1	12.0	.59
APR									
05...	1405	260	59	7.3	11.1	13	2	11.1	.51
19...	1430	169	51	7.3	9.2	21	1	11.8	.40
MAY									
03...	1435	199	62	7.0	11.3	25	4	11.1	.31
17...	1500	181	65	6.5	9.9	25	3	11.4	.40
JUN									
07...	1440	220	60	7.6	13.3	21	2	10.9	.50
21...	1445	105	66	7.3	13.6	21	6	10.8	.25
JUL									
12...	1510	69	70	7.6	14.6	25	2	11.0	.15
26...	1615	49	75	7.2	18.0	25	3	9.8	.21
AUG									
09...	1710	34	82	7.2	22.2	21	1	9.5	.33
23...	1650	72	82	6.8	15.6	65	7	8.8	.27
SEP									
13...	1530	75	73	7.2	15.7	25	1	10.2	.42
27...	1520	260	65	6.8	12.0	21	2	11.0	.81

DATE	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT								
04...	.13	.05	.03	0	3	5	.0	0
18...	.16	.07	.03	0	1	9	.0	10
NOV								
02...	.08	.02	.01	0	1	5	.0	0
16...	.10	.04	.01	0	1	7	.0	0
DEC								
07...	.06	.02	.01	0	5	9	.1	10
14...	.06	.02	.01	0	0	3	.0	0
JAN								
04...	.06	.01	.01	0	2	13	.0	10
18...	.08	.04	.01	0	2	10	.0	10
FEB								
08...	.06	.02	.01	0	1	5	.0	0
15...	.05	.02	.01	0	1	13	.1	0
MAR								
08...	.08	.05	.00	0	0	24	.1	0
22...	.06	.03	.01	0	2	8	.0	10
APR								
05...	.08	.03	.01	0	0	17	.6	0
19...	.08	.02	.01	0	0	26	.0	0
MAY								
03...	.06	.04	.01	0	0	20	.1	5
17...	.06	.02	.00	<10	1	6	.0	0
JUN								
07...	.08	.02	.00	0	0	2	.2	0
21...	.06	.02	.01	0	6	8	.0	2
JUL								
12...	.11	.03	.01	0	1	10	.0	0
26...	.17	.04	.01	0	0	6	.2	0
AUG								
09...	.24	.07	.02	0	0	7	.0	0
23...	.10	.09	.02	0	1	9	.3	0
SEP								
13...	.14	.03	.02	0	0	4	.0	0
27...	.06	.02	.00	0	1	12	.0	0

14250900 GRAYS RIVER NEAR GRAYS RIVER, WA

LOCATION.--Lat 46°21'34", long 123°33'55", in SE¼SE¼ sec.8, T.10 N., R.7 W., Wahkiakum County, Hydrologic Unit 17080006, at Highway 830 crossing 2.2 mi (3.5 km) east of Grays River.

DRAINAGE AREA.--92.5 mi² (239.6 km²).

PERIOD OF RECORD.--Water years 1973, 1976 to September 1977 (discontinued).

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)
OCT									
04...	1555	87	67	7.2	15.0	--	2	9.8	.06
18...	1720	60	75	7.4	12.7	8	5	10.5	.01
NOV									
02...	1345	435	58	7.3	11.2	25	4	10.7	.40
16...	1300	235	62	7.3	10.6	29	5	10.8	.19
DEC									
07...	1335	155	66	7.3	7.4	17	1	12.0	.20
14...	1250	240	62	7.3	7.6	17	3	12.1	.28
JAN									
04...	1355	305	65	7.3	5.0	13	1	12.3	.39
18...	1315	680	57	7.2	6.5	50	15	11.3	.32
FEB									
08...	1500	175	65	7.5	7.1	17	1	11.8	.27
15...	1345	550	60	7.5	7.6	21	1	11.9	.35
MAR									
08...	1630	4400	49	7.1	6.8	65	30	11.6	.45
22...	1350	700	55	7.3	8.3	17	2	11.9	.29
APR									
05...	1320	395	59	7.3	10.8	8	1	10.8	.26
19...	1355	265	60	6.9	8.3	13	1	11.7	.21
MAY									
03...	1355	575	55	6.9	10.5	42	10	11.0	.18
17...	1425	265	60	6.9	10.0	17	2	11.0	.19
JUN									
07...	1400	520	57	7.6	13.8	8	2	10.8	.24
21...	1400	185	64	7.2	13.2	8	2	10.9	.14
JUL									
12...	1435	96	70	7.4	14.7	13	1	10.2	.14
26...	1530	62	70	7.0	19.5	8	1	9.0	.14
AUG									
09...	1550	44	77	7.2	21.8	4	1	9.8	.11
23...	1555	69	80	6.8	15.1	17	2	9.0	.14
SEP									
13...	1440	150	66	7.2	15.9	46	1	10.3	.21
27...	1435	400	58	6.9	12.1	13	3	11.3	.34

DATE	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT								
04...	.02	.02	.01	0	2	6	.0	0
18...	.02	.01	.01	0	0	9	.0	0
NOV								
02...	.04	.02	.00	0	0	2	.0	0
16...	.05	.02	.00	0	1	10	.0	10
DEC								
07...	.03	.01	.00	0	7	12	.1	10
14...	.03	.01	.00	0	0	2	.0	0
JAN								
04...	.05	.01	.01	0	2	12	.0	10
18...	.12	.05	.00	0	2	11	.0	0
FEB								
08...	.03	.01	.00	0	1	9	.0	0
15...	.03	.01	.01	0	0	13	.0	10
MAR								
08...	.10	.13	.00	0	0	3	.0	0
22...	.08	.02	.01	0	3	18	.0	0
APR								
05...	.06	.01	.01	0	0	13	.0	0
19...	.08	.01	.01	0	1	16	.0	0
MAY								
03...	.08	.04	.01	0	1	18	.5	0
17...	.07	.02	.00	0	1	4	.2	0
JUN								
07...	.05	.02	.00	0	0	3	.0	0
21...	.03	.01	.00	0	2	4	.0	0
JUL								
12...	.04	.02	.01	0	1	9	.0	2
26...	.04	.02	.00	0	0	7	.2	0
AUG								
09...	.05	--	.00	0	0	6	.0	6
23...	.02	.02	.01	0	1	7	.1	0
SEP								
13...	.02	.01	.00	0	0	6	.0	0
27...	.03	.01	.00	0	1	5	.0	0

14270000 COLUMBIA RIVER NEAR ILWACO, WA

LOCATION.--Lat 46°16'00", long 124°02'12", T.9 N., R.11 W., Pacific County, Hydrologic Unit 17080006, on right bank at U.S. Corps of Engineers signal tower 100 ft (30 m) upstream from "A" jetty, 3.0 mi (4.8 km) south of Ilwaco, and at mile 2.4 (3.9 km).

DRAINAGE AREA.--258,000 mi² (668,000 km²).

PERIOD OF RECORD.--June to September 1977.

GAGE.--Water-stage recorder. Datum of gage is at -10.0 ft (-3.048 m) mean sea level.

REMARKS.--Records good. Station in tidal effect at all stages.

EXTREMES FOR CURRENT YEAR.--Maximum stage during period June to September 1977, 15.47 ft (4.715 m) Sept. 17; minimum stage, 3.37 ft (1.027 m) June 30.

GAGE HEIGHT, IN FEET, JUNE TO SEPTEMBER 1977

DAY	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1					---	---	15.31	3.60	14.63	4.25	14.03	7.16
2					---	---	15.35	3.55	13.87	4.98	14.69	7.63
3					---	---	14.95	3.90	13.98	6.36	13.96	8.13
4					---	---	14.66	4.67	13.88	7.20	13.62	9.65
5					---	---	13.71	5.35	13.73	8.07	13.09	7.97
6					---	---	13.23	6.05	13.50	8.01	12.81	7.73
7					---	---	13.36	7.02	13.31	7.93	12.70	7.53
8					---	---	13.26	7.70	13.30	7.66	12.63	7.05
9					---	---	13.09	7.52	13.33	7.39	13.05	6.68
10					---	---	13.30	7.02	13.48	6.95	13.59	6.36
11					---	---	13.50	6.80	13.96	6.55	12.95	6.27
12					---	---	13.61	6.62	14.28	6.40	13.86	6.07
13					---	---	13.71	5.95	12.96	6.09	14.18	6.21
14					---	---	13.71	5.44	14.50	5.89	14.57	6.56
15					---	---	12.07	5.14	14.54	5.70	14.87	6.50
16					---	---	13.86	4.98	14.31	5.82	15.30	6.61
17					14.00	5.38	13.98	5.07	14.27	6.36	15.47	6.63
18					14.11	5.33	14.09	5.17	14.25	6.77	15.42	7.46
19					13.93	5.37	13.80	5.51	14.31	7.29	15.15	10.29
20					13.80	5.86	13.52	6.07	14.26	7.18	14.34	7.40
21					13.38	5.96	13.68	6.58	14.17	8.41	13.91	7.06
22					12.77	6.28	13.40	6.92	14.21	6.91	14.30	6.91
23					12.83	6.65	13.71	7.45	14.51	6.81	14.52	6.97
24					13.22	7.12	14.08	7.15	14.89	6.62	14.70	6.82
25					13.52	7.51	14.24	6.63	15.15	6.27	14.56	6.96
26					14.06	6.71	14.50	5.89	15.06	5.71	14.70	6.85
27					14.28	5.95	14.86	5.18	13.98	5.46	14.83	6.83
28					14.69	4.83	14.93	4.67	15.28	5.70	14.95	6.70
29					14.94	4.01	12.99	4.13	14.86	5.68	14.66	6.42
30					12.77	3.37	15.01	4.02	14.67	5.92	14.26	6.44
31					---	---	14.80	4.08	14.36	6.71	---	---
MEAN					13.74	5.74	13.93	5.65	14.18	6.54	14.18	7.12
YEAR	14.05	6.34										

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1					---	---	13.19	8.11	13.56	7.19	13.40	7.18
2					---	---	13.47	7.91	13.80	7.45	13.06	8.21
3					---	---	13.68	7.96	13.60	7.72	12.71	8.89
4					---	---	13.69	7.87	13.01	7.77	12.49	---
5					---	---	13.55	7.78	12.37	---	11.76	9.46
6					---	---	12.66	7.69	11.85	8.67	11.47	9.76
7					---	---	11.93	---	11.36	9.16	11.59	9.67
8					---	---	11.39	7.76	11.27	9.48	11.63	9.16
9					---	---	11.17	8.36	11.42	9.59	11.86	8.68
10					---	---	11.03	8.75	11.65	9.40	12.44	8.41
11					---	---	11.42	9.13	11.98	9.29	---	7.86
12					---	---	11.53	9.12	12.53	9.17	13.50	7.38
13					---	---	11.69	9.04	---	8.96	14.13	7.02
14					---	---	11.87	8.82	13.33	8.62	14.40	6.65
15					---	---	---	8.66	13.53	8.11	14.21	7.07
16					---	---	12.42	8.64	13.85	7.90	14.22	7.85
17					12.62	9.21	12.81	8.56	14.13	7.75	14.13	8.58
18					12.68	9.15	13.05	8.40	13.92	7.39	13.73	9.11
19					12.76	9.16	13.28	8.35	13.39	7.30	13.77	---
20					13.01	8.99	13.38	8.16	12.81	7.85	13.11	9.97
21					12.90	8.87	13.07	7.86	12.25	---	12.67	9.71
22					12.73	8.45	12.33	---	11.86	9.00	13.11	9.49
23					12.16	8.20	11.77	7.51	12.25	9.53	13.92	9.09
24					11.70	---	11.61	8.12	12.68	9.69	14.16	8.48
25					11.40	7.55	11.56	8.59	13.35	9.39	---	7.77
26					11.41	7.93	11.79	8.80	13.53	8.70	14.63	7.11
27					11.52	8.06	12.21	8.73	---	8.17	14.43	7.16
28					11.82	7.96	12.70	8.38	14.33	7.61	14.49	7.65
29					12.26	8.02	---	8.06	14.68	7.80	14.17	7.97
30					---	8.11	13.40	7.80	14.41	6.96	13.57	8.33
31					---	---	13.56	7.34	14.16	6.99	---	---
MEAN					12.23	8.43	12.45	8.28	12.99	8.37	13.31	8.35
YEAR	12.82	8.35										

Discharge at ungaged sites

Monthly records for the following four sites have been computed by routing methods described in USGS circular 550. Circular 550 contains monthly records for these sites for water year 1928-65, including monthly flows adjusted for major upstream storage. Figures given herein represent unadjusted flows, and are rated fair. Adjusted records are available from the Northwest Water Resources Data Center.

14144700. COLUMBIA RIVER AT VANCOUVER, WASH.--Lat 45°37'15", long 122°40'20", in NE¼NW¼.sec.34, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, 5.0 mi (8.0 km) upstream from Willamette River, and at mile 106.5 (171.4 km). Drainage area, 241,000 mi^2 (624,000 km^2) approximately. Records available, monthly discharges October 1927 to current year. Daily discharge for October 1963 to September 1969, published in annual data reports for Oregon, 1965-67, 1969.

14222870. COLUMBIA RIVER AT ST. HELENS, OREG.--Lat 45°51'58", long 122°47'00", Columbia County, Hydrologic Unit 17080003, center of channel at intersection of Township (4/5N) line and Oregon-Washington boundary, 0.6 mi (1.0 km) east of St. Helens, and at mile 86.0 (138.4 km). Drainage area, 253,900 mi^2 (657,600 km^2), approximately. Records available, monthly discharge October 1927 to current year.

14245300. COLUMBIA RIVER AT LONGVIEW, WASH.--Lat 46°06'22", long 122°57'14", Cowlitz County, Hydrologic Unit 17080003, at Longview Bridge, 1.0 mi (1.6 km) south of Longview, 2.0 mi (3.2 km) downstream from Cowlitz River, and at mile 66.0 (106.2 km). Drainage area, 256,700 mi^2 (664,900 km^2), approximately. Records available, monthly discharge October 1927 to current year.

14280000. COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OREG.--Lat 46°15', long 124°05', Clatsop County, Hydrologic Unit 17080006, center of channel at river mouth, due north from original end of south jetty, 12.3 mi (19.8 km) northwest of Astoria, and at mile 0 (0 km). Drainage area, 258,000 mi^2 (668,000 km^2), approximately. Records available, monthly discharge October 1927 to current year.

MONTHLY AND ANNUAL MEAN DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR 1977

OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
14144700 COLUMBIA RIVER AT VANCOUVER, WA												
146,200	133,500	137,700	148,400	132,700	135,200	114,700	142,700	131,600	93,400	95,710	102,700	126,200
14222870 COLUMBIA RIVER AT SAINT HELENS, OR												
164,600	152,200	149,600	162,900	142,300	167,800	135,300	170,100	149,600	102,100	105,000	118,000	143,300
14245300 COLUMBIA RIVER AT LONGVIEW, WA												
170,900	159,800	156,500	170,200	148,100	179,000	141,300	176,200	155,400	104,500	108,400	123,100	149,500
14280000 COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OR												
173,900	157,900	160,200	171,000	155,200	191,200	148,300	179,800	161,500	107,000	108,900	125,600	153,400

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain, but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations duing water year 1977

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Bear River basin					
12009500	Bear Branch near Naselle, Wa.	Lat 46°19'48", long 123°54'36", on line between secs.21 and 22, T.10 N., R.10 W., Pacific County, on right bank 3.4 mi (5.5 km) upstream from bridge on U.S. Highway 101 and 5.3 mi (8.5 km) southwest of Naselle.	11.7 (30.3)	1963-75‡, 1976-	3- 7-77	2.72	199
		South Nemah River basin					
12010800	South Nemah River near Naselle, Wa. (discontinued)	Lat 46°26'27", long 123°51'38", in NE¼SW¼ sec.13, T.11 N., R.10 W., Pacific County, at U.S. Highway 101, 6 mi (9.7 km) northwest of Naselle.	1.99 (5.15)	1962-77	3- 7-77	5.69	66
		Willapa River basin					
12012000	Fork Creek near Lebam, Wa.	Lat 46°33'19", long 123°35'00", in SW¼SW¼ sec.5, T.12 N., R.7 W., Pacific County, on right bank 0.8 mi (1.3 km) upstream from mouth and 1.6 mi (2.6 km) southwest of Lebam.	20.4 (52.8)	1953-70‡, 1971-	3- 7-77	5.82	1,740
		Smith Creek basin					
12015100	Clearwater Creek near Raymond, Wa.	Lat 46°44'59", long 123°45'59", on line between secs.26 and 35, T.15 N., R.9 W., Pacific County, on right bank 40 ft (12 m) downstream from road crossing, 0.7 mi (1.1 km) upstream from mouth, and 4.5 mi (7.2 km) northwest of Raymond.	3.98 (10.31)	1964-71‡, 1976-	3- 7-77	1.39	90
		Chehalis River basin					
12020500	Elk Creek near Doty, Wa.	Lat 46°37'42", long 123°19'50", in SE¼NE¼ sec.8, T.13 N., R.5 W., Lewis County, on right bank 0.5 mi (0.8 km) upstream from Nine Creek, 1.0 mi (1.6 km) upstream from Deer Creek, 2.6 mi (4.2 km) west of Doty and at mile 2.5 (4.0 km).	46.6 (121)	1944-50‡, 1952-67, 1968-70‡, 1971-72, 1974	3- 7-77	6.12	1,030
12025300	Salzer Creek near Centralia, Wa.	Lat 46°41'31", long 122°54'26", in NE¼NE¼ sec.22, T.14 N., R.2 W., Lewis County,, on right bank at downstream side of highway bridge, 500 ft (152 m) downstream from unnamed tributary, 2.4 mi (3.9 km) east of KELA Radio Tower in Centralia, and at mile 3.9 (6.3 km).	12.6 (32.6)	1969-71‡, 1972-	3- 9-77	7.25	274
12032500	Cloquallum Creek at Elma, Wa.	Lat 47°00'17", long 123°23'11", in SW¼SW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, on right bank 10 ft (3 m) downstream from State Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, 1.9 mi (3.1 km) downstream from Wildcat Creek, and at mile 1.9 (3.1 km).	64.9 (168)	1942-43‡, 1944-72‡, 1973-	3- 9-77	7.96	2,040
12034700	West Fork Satsop River tributary near Matlock, Wa. (discontinued)	Lat 47°18'50", long 123°35'25", in NE¼ sec.17, T.21 N., R.7 W., Grays Harbor County, at Simpson logging road, 3 mi (4.8 km) south of Camp Grisdale, 10.5 mi (16.9 km) northwest of Matlock, and 24 mi (38.6 km) north of Montesano.	.33 (.85)	1950-77	3- 7-77	6.04	18
		Quillayute River basin					
12042900	Grader Creek near Forks, Wa.	Lat 47°55'40", long 124°24'25", in SW¼ sec.17, T.28 N., R.13 W., Clallam County, at U.S. Highway 101, 2 mi (3.2 km) southeast of Forks.	1.67 (4.33)	1950-	3- 7-77	19.28	147
		Hoko River basin					
12043300	Hoko River near Sekiu, Wa.	Lat 48°14'30", long 124°22'57",in NE¼SW¼ sec.28, T.32 N., R.13 W., Clallam County, on right bank 2.2 mi (3.5 km) upstream from Little Hoko River and 6.0 mi (6.4 km) southwest of Sekiu.	51.2 (132.6)	1962-74‡, 1975-	3- 8-77	7.20	3,620
		East Twin River basin					
12043430	East Twin River near Pysht, Wa.	Lat 48°09'49", long 123°56'33", in NW¼SW¼ sec.24, T.31 N., R.10 W., Clallam County, on right bank on downstream side of bridge on State Highway 112, 1,300 ft (396 m) upstream from mouth, and 8.4 mi (13.5 m) southeast of Pysht.	14.0 (36.3)	1962-72‡, 1973-	3- 8-77	4.71	913
		Morse Creek basin					
12047300	Morse Creek near Port Angeles, Wa.	Lat 48°02'16", long 123°20'57", in SW¼NE¼ sec.5, T.29 N., R.5 W., Clallam County, on right bank at steel foot bridge, 1,000 ft (305 m) downstream from Port Angeles diversion dam, 6.4 mi (10.3 km) upstream from mouth, and 6.8 mi (10.9 km) southeast of ferry terminal in Port Angeles.	46.6 (120.7)	1967-76‡, 1977-	3- 8-77	3.96	441

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1977

Station No.	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Snow Creek basin					
12050500	Snow Creek near Maynard, Wa.	Lat 47°56'25", long 122°53'12", in NE¼NE¼ sec.11, T.28 N., R.2 W., Jefferson County, on right bank 1,800 ft (549 m) upstream from Andrews Creek, 3.2 mi (5.1 km) south of Uncas, and 4.0 mi (6.4 km) south of Maynard.	11.2 (29.0)	1952-72‡, 1973-	3- 8-77	2.16	50
		Hamma Hamma River basin					
12054500	Hamma Hamma River near Eldon, Wa.	Lat 47°33'18", long 123°06'57", in SE¼NW¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, on left bank 0.3 mi (0.5 km) downstream from Watson Creek, 4.6 mi (7.4 km) northwest of Eldon, and at mile 6.2 (10.0 km).	51.3 (133)	1952-71‡, 1972-	12-26-76	3.72	2,260
12054600	Jefferson Creek near Eldon, Wa.	Lat 47°33'00", long 123°08'18", in SE¼SE¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, on right bank 0.2 mi (0.3 km) upstream from mouth and 4.0 mi (6.4 km) northwest of Eldon.	21.6 (55.9)	1958-71‡, 1972-	12-26-76	3.50	820
		Skokomish River basin					
12058000	Deer Meadow Creek near Hoodsport, Wa.	Lat 47°24'16", long 123°13'16", in NW¼NW¼ sec.8, T.22 N., R.4 W., Mason County, on left bank 0.5 (0.8 km) west of Hoodsport.	1.83 (4.74)	1950-73‡, 1974-	3- 7-77	1.67	71
12059800	South Fork Skokomish River near Hoodsport, Wa.	Lat 47°26'45", long 123°24'54", in NW¼ sec.35, T.23 N., R.6 W., Mason County, Olympic National Forest, on left bank 100 ft (30 m) downstream from Pine Creek and 13.1 mi (21.1 km) west of Hoodsport.	26.0 (67.3)	1964-70‡, 1972-	12-26-76	4.43	1,820
		Tahuya River basin					
12065500	Gold Creek near Bremerton, Wa.	Lat 47°33'20", long 122°48'35", in NE¼SW¼ sec.21, T.24 N., R.1 W., Kitsap County, on right bank 1.2 mi (1.9 km) upstream from mouth and 8.4 mi (13.5 km) west of Olympic College in Bremerton.	1.51 (3.91)	1946-70‡, 1972-	3- 7-77	3.24	58
		Dewatto River basin					
12068500	Dewatto River near Dewatto, Wa.	Lat 47°28'10", long 123°01'33", in NE¼SW¼ sec.23, T.23 N., R.3 W., Mason County, on right bank 400 ft (122 m) downstream from highway bridge, 2.0 mi (3.2 km) upstream from mouth, and 2.2 mi (3.5 km) northeast of Dewatto.	18.4 (47.7)	1947-54‡, 1955-57, 1958-74‡, 1975-	3- 7-77	3.53	750
		Chico Creek basin					
12072000	Chico Creek near Bremerton, Wa.	Lat 47°35'28", long 122°42'29", in NE¼NW¼ sec.8, T.24 N., R.1 E., Kitsap County, on left bank at highway crossing, 0.5 mi (0.8 km) downstream from Dickerson Creek, and 3.7 mi (6.0 km) northwest of Olympic College in Bremerton.	15.3 (39.6)	1947-50‡, 1961-74‡, 1975-	3- 7-77	3.35	351
		Goldsborough Creek basin					
12076500	Goldsborough Creek near Shelton, Wa.	Lat 47°12'56", long 123°10'52", in NW¼NW¼ sec.22, T.20 N., R.4 W., Mason County, on right bank 100 ft (30 m) upstream from road bridge, 3.8 mi (6.1 km) west of Shelton, and 5.5 mi (8.8 km) upstream from mouth.	39.3 (102)	1952-71‡, 1972-	3- 7-77	3.91	397
		Kennedy Creek basin					
12078400	Kennedy Creek near Kamilche, Wa.	Lat 47°04'37", long 123°07'33", in SW¼NE¼ sec.1, T.18 N., R.4 W., Mason County, on left bank 100 ft (30 m) upstream from Kennedy Falls, 2.2 mi (3.5 km) upstream from mouth at Oyster Bay, and 3.9 mi (6.3 km) south of Kamilche.	17.4 (45.1)	1961-74‡, 1972-74, 1976	3- 7-77	3.33	518
		Deschutes River basin					
12079000	Deschutes River near Rainier, Wa.	Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, on right bank 75 ft (23 m) upstream from county road crossing, 0.4 mi (0.6 km) downstream from outlet of Reichel Lake, 2.7 mi (4.3 km) southeast of Rainier, and at mile 25.9 (41.7 km).	89.8 (232.6)	1949-75‡, 1976-	3- 9-77	10.21	3,300
		McAllister Creek basin					
12081300	Eaton Creek near Yelm, Wa.	Lat 46°58'05", long 122°43'30", in S½ sec.7, T.17 N., R.1 E., Thurston County, at county road, 6 mi (9.6 km) northwest of Yelm.	2.28 (5.91)	1960-	3- 9-77	<4.77	<17

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1977

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Judd Creek basin					
12091700	Judd Creek near Burton, Wa.	Lat 47°24'40", long 122°28'18", in NE¼SW¼ sec.7, T.22 N., R.3 E., King County, on right bank at upstream side of culvert at 216th Street S.W., 1.0 mi (1.6 km) upstream from mouth, and 1.5 mi (2.4 km) north of Burton.	4.41 (11.42)	1968-75‡, 1976-	1-18-77	4.38	a96
		Puyallup River basin					
12095000	South Prairie Creek at South Prairie, Wa.	Lat 47°08'23", long 122°05'28", in NE¼NW¼ sec.18, T.19 N., R.6 E., Pierce County, on left bank 30 ft (9 m) downstream from railroad bridge, 200 ft (61 m) upstream from bridge on State Highway 162, 0.3 mi (0.5 km) east of South Prairie and at mile 5.9 (9.5 km).	79.5 (206)	1950-71‡, 1972-	1-18-77	4.28	710
		Lake Washington basin					
12115300	Green Point Creek near Cedar Falls, Wa.	Lat 47°23'20", long 121°40'30", in SE¼ sec.17 T.22 N., R.9 E., King County, at road crossing, near mouth, 5 mi (8.0 km) southeast of Cedar Falls.	0.89 (2.31)	1957-	1-18-77	10.98	36
12119600	May Creek at mouth, near Renton, Wa.	Lat 47°31'48", long 122°12'00", in NE¼NW¼ sec.32, T.24 N., R.5 E., King County, on left bank at highway crossing, 0.2 mi (0.3 km) upstream from mouth, and 2 mi (3.2 km) north of Renton.	12.7 (32.9)	1964-71‡, 1973-	12-26-76	2.65	94
12119700	Coal Creek near Bellevue, Wa.	Lat 47°34'00", long 122°10'45", in NW¼SW¼ sec.16, T.24 N., R.5 E., King County, 0.8 mi (1.3 km) upstream from mouth and 3 mi (4.8 km) south of Bellevue.	6.80 (17.6)	1964-68‡, 1969-	8-25-77	2.28	99
12119800	Valley (formerly North Branch Mercer) Creek near Bellevue, Wa (discontinued)	Lat 47°37'42", long 122°09'06', in NW¼NE¼ sec.27, T.25 N., R.5 E., King County, at Northrup Way and 140th Avenue N.E., 2.5 mi (4.0 km) northeast of Bellevue.	3.05 (7.90)	1949-67, 1970-77	3- 9-77	12.32	62
12121700	Tibbetts Creek near Issaquah, Wa.	Lat 47°32'30", long 122°03'47", in SW¼NE¼ sec.29, T.24 N., R.6 E., King County, on right bank 120 ft (37 m), downstream from old highway bridge, 1.2 mi (1.9 km) upstream from mouth, and 1.5 mi (2.4 km) northwest of Issaquah.	3.90 (10.10)	1974-68‡, 1972-76‡, 1977-	6- 1-77	7.02	74
12124000	Evans Creek above mouth, near Redmond, Wa.	Lat 47°40'31", long 122°04'48", on north line NE¼SE¼ sec.7, T.25 N., R.6 E., King County, on right bank 25 ft (8 m) upstream from county bridge, 2.0 mi (3.2 km) east of Redmond, and at mile 0.8 (1.3 km).	13.0 (33.7)	1956-76‡, 1977-	6- 1-77	2.83	82
		Snohomish River basin					
12141000	Woods Creek near Monroe, Wa.	Lat 47°52'08", long 121°55'31", in NW¼SW¼ sec.33, T.28 N., R.7 E., Snohomish County, on right bank 0.4 mi (0.6 km) downstream from West Fork, 2.4 mi (3.9 km) northeast of Monroe, and at mile 3.1 (5.0 km).	56.4 (146)	1947-71‡, 1972-	1-18-77	3.07	584
12142300	Hancock Creek near Snoqualmie, Wa.	Lat 47°34'21", long 121°41'12", in SE¼SE¼ sec.8, T.24 N., R.9 E., King County, on left bank 300 ft (91 m) downstream from Lake Hancock outlet, 1.5 mi (2.4 km) upstream from mouth, and 7.2 mi (11.6 km) northeast of Snoqualmie.	7.67 (19.9)	1965-71‡, 1972-	1-18-77	2.36	388
12143000	North Fork Snoqualmie River near North Bend, Wa.	Lat 47°32'15", long 121°44'26", in SW¼NE¼ sec.26, T.24 N., R.8 E., King County, on right bank 3.4 mi (5.5 km) northeast of North Bend and at mile 2.2 (3.5 km).	95.7 (248)	1908-26‡, 1930-38‡, 1961-71‡, 1972-	1-18-77	8.33	7,880
1214400	South Fork Snoqualmie River at North Bend, Wa.	Lat 47°29'18", long 121°47'03", in SW¼SE¼ sec.9, T.23 N., R.8 E., King County, on left bank 0.5 (0.8 km) south of North Bend and 2.8 mi (4.5 km) upstream from mouth.	81.7 (211.6)	1907-26‡, 1929-38‡, 1945-50‡, 1961-74‡, 1975-	1-18-77	7.76	1,620
12146000	Patterson Creek near Fall City, Wa.	Lat 47°34'52", long 121°56'23", in SW¼NE¼ sec.8, T.24 N., R.7 E., King County, on left bank 150 ft (46 m) upstream from private road bridge, 2.6 mi (4.2 km) northwest of Fall City, and at mile 1.9 (3.1 km).	15.5 (40.1)	1948-50‡, 1956-71‡, 1972-	1-18-77	3.00	67
12147000	Griffin Creek near Carnation, Wa.	Lat 47°36'58", long 121°54'15", in SW¼SW¼ sec.27, T.25 N., R.7 E., King County, on left bank 0.2 mi (0.3 km) upstream from bridge on State Highway 203, 2.3 mi (3.7 km) south of Carnation, and at mile 0.9 (1.4 km).	17.1 (44.3)	1946-70‡, 1972-	1-18-77	2.84	149

‡ Operated as continuous-record station.

a The annual minimum discharge was determined to be 0.5 ft³/s on Aug. 12, 1977 from recorded gage-height and stage-discharge relation rating.

Annual maximum discharge at crest-stage partial-record stations during water year 1977

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Snohomish River basin--Continued					
12152500	Pilchuck River near Granite Falls, Wa.	Lat 48°03'13", long 121°57'23", in SE¼ sec.30, T.30 N., R.7 E., Snohomish County, on right bank 200 ft above county road bridge and 2 mi (3.2 km) southeast of Granite Falls.	54.4 (141)	1944-57‡, 1958-	1-18-77	6.85	3,330
		Stillaguamish River basin					
12168500	Pilchuck Creek near Bryant, Wa.	Lat 48°15'58", long 122°09'46", in NE¼NE¼ sec.16, T.32 N., R.5 E., Snohomish County, on right bank 500 ft (152 m) upstream from bridge on State Highway 9, 1.8 mi (2.9 km) north of Bryant, and at mile 6.4 (10.3 km).	52.0 (134.7)	1929-31‡, 1950-75‡, 1976-	1-18-77	5.60	2,760
		Skagit River basin					
12196000	Alder Creek near Hamilton, Wa.	Lat 48°31'42", long 121°56'58", in NW¼NE¼ sec.18, T.35 N., R.7 E., Skagit County, on left bank 3 ft (1 m) downstream from logging road culvert, 0.3 mi (0.5 km) upstream from bridge on State Highway 20, 2.0 mi (3.2 km) east of Hamilton and at mile 0.8 (1.3 km).	10.7 (27.7)	1944-71‡, 1972-	1-18-77	8.07	261
12196200	Day Creek below Day Lake, near Lyman, Wa.	Lat 48°24'32", long 121°58'47", in SE¼NW¼ sec.25, T.36 N., R.6 E., Skagit County, on right bank 1,000 ft (305 m) downstream from outlet of Day Lake, 8.9 mi (14.3 km) southeast of Lyman, and at mile 10.4 (16.7 km).	6.56 (16.99)	1963-71‡, 1973-	1-18-77	5.02	595
12199800	East Fork Nookachamps Creek near Big Lake, Wa.	Lat 48°24'50", long 122°09'25", in SW¼SW¼ sec.22, T.34 N., R.5 E., Skagit County, on right bank 3.0 mi (4.8 km) upstream from Walker Creek, 3.8 mi (6.1 km) northeast of town of Big Lake, and at mile 8.5 (13.7 km).	3.56 (9.22)	1961-71‡, 1972, 1974-	1-18-77	5.20	656
		Samish River basin					
12201500	Samish River near Burlington, Wa.	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, on left bank 500 ft (152 m) downstream from bridge on U.S. Highway 99, 0.5 mi (0.8 km) downstream from Friday Creek, 5.0 mi (8.0 km) north of Burlington, and at mile 10.3 (16.6 km).	87.8 (227)	1944-71‡, 1972-	1-18-77	7.14	1,650
		Whatcom Creek basin					
12201950	Anderson Creek near Bellingham, Wa.	Lat 48°20'26", long 122°15'58", in NW¼NW¼ sec.26, T.37 N., R.4 E., Whatcom County, on right bank at upstream side of county bridge, 500 ft (152 m) upstream from mouth and Lake Whatcom, and 11.0 mi (17.7 km) southeast of Western Washington College in Bellingham.	4.13 (10.7)	1968-70‡, 1971-	1-18-77	4.38	147
		Nooksack River basin					
12204400	Nooksack River tributary near Glacier, Wa.	Lat 48°54'30", long 121°48'20", in SW¼ sec.32, (unsurveyed), T.40 N., R.8 E., Whatcom County, at State Highway 542, 6.5 mi (10.5 km) east of Glacier.	1.15 (2.98)	1956-60, 1962-	1-18-77	15.88	37
12208000	Middle Fork Nooksack River near Deming, Wa.	Lat 48°46'43", long 122°06'20", in lot 7 or 8, in SW¼ sec.13, T.38 N., R.5 E., Whatcom County, on left bank 0.5 mi (0.8 km) upstream from Heislers Creek, 6.0 mi (9.7 km) southeast of Deming, and at mile 5.6 (9.0 m).	73.3 (190)	1921‡, 1934-35‡, 1965-68‡, 1970‡, 1971-	1-18-77	7.48	2,560
12212800	Tenmile Creek tributary No. 2 near Bellingham, Wa.	Lat 48°50'35", long 122°24'30", 0.2 mi (0.3 km) north from center of sec.27, T.39 N., R.3 E., Whatcom County, at Starry Road, 2.8 mi (4.5 km) northwest of Noon, and 7 mi (11.3 km) northeast of Bellingham.	.24 (.62)	1956-	1-18-77	6.88	23
		White Salmon River basin					
14122800	Phelps Creek near B-Z Corner, Wa. (discontinued)	Lat 46°53'01", long 121°31'13", in NE¼NW¼ sec.35, T.5 N., R.10 E., Klickitat County, at State Highway 141, 2.5 mi (4.0 km) north of B-Z corner.	1.88 (4.87)	1970-77	5- 3-77	11.59	14
		Groeneveld Creek basin					
14144600	Groeneveld Creek near Camas, Wa.	Lat 45°35'10", long 122°27'28", sec.41, T.1 N., R.3 E., Clark County, at private road 15 ft (5 m) east of county road, 0.4 mi (0.6 km) above mouth, and 2.5 mi (4.0 km) west of Camas city center.	0.51 (1.32)	1958-	2-27-77	---	<7

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1977

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Lake River basin					
14212000	Salmon Creek near Battle Ground, Wa.	Lat 45°46'26", long 122°26'40", in NE¼SE¼ sec.4, T.3 N., R.3 E., Clark County, on left bank 100 ft (30 m) upstream from highway bridge, 150 ft (46 m) downstream from Rock Creek, 4.3 mi (6.9 km) east of Battle Ground, and at mile 22.1 (35.6 km).	18.3 (47.4)	1944-75‡, 1976-	3- 7-77	2.28	176
		Lewis River basin					
14213500	Big Creek below Skookum Meadow near Trout Lake, Wa.	Lat 46°05'36", long 121°51'50", Skamania County, Gifford Pinchot National Forest 40 ft (12 m) upstream from forest service road, just downstream from Skookum Meadow, 3 mi (4.8 km) upstream from mouth and 17 mi (27.4 km) northwest of Trout Lake.	13.2 (34.2)	1928-31‡, 1956-70‡, 1971-	3- 7-77	5.44	250
14216000	Lewis River above Muddy River, near Cougar, Wa.	Lat 46°03'30", long 121°59'00", in SE¼ sec.30, T.7 N., R.7 E., Skamania County, Gifford Pinchot Forest, on right bank 1.0 mi (1.6 km) upstream from Pepper Creek, 1.9 mi (3.1 km) upstream from Muddy River, 15.4 mi (24.8 km) east of Cougar, and at mile 62.0 (99.8 km).	227 (588)	1928-34‡, 1955-70‡, 1972-	3- 7-77	6.66	2,490
		Kalama River basin					
14222970	Spring Creek near Cougar, Wa.	Lat 46°06'37", long 122°21'23", in NW¼SE¼ sec.7, T.7 N., R.4 E., Cowlitz County, on right bank 100 ft (30 m) upstream from mouth, 400 ft (122 m) southeast of Kalama Falls, and 4.7 mi (7.6 km) northwest of Cougar.	---	1970-71‡, 1972-	3- 7-77	2.58	88
14223500	Kalama River below Italian Creek, near Kalama, Wa.	Lat 46°02'42", long 122°48'51", in NE¼SW¼ sec.33, T.7 N., R.1 W., Cowlitz County, on right bank 2.8 mi (4.5 km) northeast of Kalama, 5.7 mi (9.2 km) downstream from Italian Creek, and at mile 4.2 (6.8 km).	198 (513)	1946-75‡,	3- 9-77	6.16	3,990
		Cowlitz River basin					
14226800	Skate Creek tributary near Packwood, Wa.	Lat 46°42'10", long 121°48'30", in NW¼ sec.16, T.14 N., R.8 E., Lewis County, at Skate Creek road 9.5 mi (15.3 km) northwest of Packwood.	1.22 (3.16)	1959-	3-27-77	12.37	45
14235500	West Fork Tilton River near Morton, Wa.	Lat 46°36'40", long 122°14'36", in NE¼SE¼ sec.13, T.13 N., R.4 E., Lewis County, on left bank 0.9 mi (1.4 km) upstream from mouth and 3.8 mi (6.1 km) northeast of Morton.	16.4 (42.5)	1951-71‡, 1972-	3-27-77	3.67	525
14237500	Winston Creek near Silver Creek, Wa.	Lat 46°28'57", long 122°31'13", about center of sec.35, T.12 N., R.2 E., Lewis County, 100 ft (30 m) downstream from bridge, 3.2 mi (5.1 km) upstream from mouth, and 4.4 mi (7.1 km) southeast of town of Silver Creek.	37.8 (97.9)	1950-70‡, 1971-	3- 9-77	3.80	323
14239000	Salmon Creek near Toledo, Wa.	Lat 46°26'30", long 122°49'15", in NW¼NW¼ sec.20, T.11 N., R.1 W., Lewis County, on right bank 0.2 mi (0.3 km) downstream from Little Salmon Creek, 2.2 mi (3.5 km) southeast of Toledo, and at mile 3.3 (5.3 km).	77.6 (201)	1962-71‡, 1972-	3- 9-77	6.30	1,220
		Elochoman River basin					
14247500	Elochoman River near Cathlamet, Wa.	Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, on right bank 125 ft (38 m) upstream from railroad bridge, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).	65.8 (170)	1941-71‡, 1972-	3- 7-77	7.62	3,860
		Jim Crow Creek basin					
14248200	Jim Crow Creek near Grays River, Wa.	Lat 46°16'37", long 123°33'37", in NE¼SW¼ sec.9, T.9 N., R.7 W., Wahkiacum County, on left bank 600 ft (180 m) downstream from logging bridge, 900 ft (270 m) upstream from Fish Creek, 1.5 mi (2.4 km) upstream from mouth, and 6.0 mi (9.7 km) southeast of the town of Grays River.	5.48 (14.19)	1964-74‡, 1975-	3- 7-77	3.64	160
		Grays River basin					
14249000	Grays River above South Fork, near Grays River, Wa.	Lat 46°23'36", long 123°28'39", in NW¼ sec.31, T.11 N., R.6 W., Pacific County, on right bank 500 ft (152 m) upstream from the South Fork, 6.8 mi (10.9 km) northeast of town of Grays River, and at mile 17.8 (28.6 km).	39.9 (103.3)	1956-75‡, 1976-	3- 7-77	8.01	2,860

‡ Operated as continuous-record station.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Bear River basin				
12009500 Bear Branch	Shoalwater Bay	Lat 46°19'48", long 123°54'30", on line between sec.21 and 22, T.10 N., R.10 W., Pacific County, 3.4 mi (5.5 km) upstream from bridge on U.S. Highway 101 and 5.3 mi (8.5 km) southwest of Naselle.	11.7	1963-73‡, 1976-77a	9-30-76 2- 9-77 4-13-77 6-21-77 8-11-77	c10.9 27.4 33.7 22.9 6.59
		Nemah River basin				
12011103 North Nemah River	Nemah River (Willapa Bay)	Lat 46°30'50", long 123°51'42", in NW¼NW¼ sec.24, T.12 N., R.10 W., Pacific County, at bridge 1.4 mi (2.3 km) east of U.S. Highway 101 at Nemah Junction.	21.1	1973	10-20-76 12- 7-76 2-10-77 4-12-77 6-21-77 7-14-77 8-10-77	12.6 41.0 96.8 56.8 42.8 22.0 12.2
		Chehalis River basin				
12022250 Chehalis River	Grays Harbor	Lat 46°37'40", long 123°03'33", in SW¼SE¼ sec.9, T.13 N., R.3 W., Lewis County, at State Highway 6 bridge at Adna and at mile 81.3 (131 km).	383	1972, 1975-76	2- 8-77 5-17-77 7-13-77 9-14-77	256 444 167 152
12024100 South Fork Newaukum River	Newaukum River	Lat 46°36'14", long 122°51'13", in NW¼SE¼ sec.17, T.13 N., R.1 W., Lewis County, at county bridge, 0.3 mi (0.5 km) northeast of Forest, 0.2 mi (0.3 km) upstream from North Fork Newaukum River, and at mile 11.1 (17.9 km).	66.2	1974-76	2- 8-77 5-18-77 9-14-77	75.2 294 41.3
12024300 North Fork Newaukum Creek	Newaukum Creek	Lat 46°39'17", long 122°46'43", in NW¼SW¼ sec.35, T.14 N., R.1 W., Lewis County, at county road, 1.4 mi (2.3 km) upstream from Lucas Creek, 5.5 mi (8.8 km) northeast of Forest, and at mile 6.6 (10.6 km).	31.5	1942-43, 1944-45‡, 1957-66‡, 1967, 1976	10- 1-76 2- 8-77 5-18-77 9-14-77	8.61 19.6 98.4 10.3
12029500 Garrard Creek	Chehalis River	Lat 46°48'34", long 123°16'15", in SW¼SE¼ sec.2, T.15 N., R.5 W., Grays Harbor County, at county road, 2.8 mi (4.5 km) southwest of Oakville, and at mile 2.6 (4.2 km).	26.5	1942-43 1944-45‡, 1958, 1961, 1976	10- 1-76 2- 7-77 5-18-77 7-15-77 9-13-77	3.67 17.4 21.7 6.95 9.28
12032300 Cloquallum Creek	Do.....	Lat 47°00'17", long 123°23'12", in SW¼SW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, 10 ft (3 m) downstream from State Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, 1.9 mi (3.1 km) downstream from Wildcat Creek, at mile 1.9 (3.1 km).	64.9	1942-43‡, 1944-72‡, 1973-77a, 1974-76	11-29-76 2- 1-77 3-25-77 5-16-77 7-11-77 7-28-77 9-12-77	66.1 119 249 105 45.9 34.4 52.6
12034700 Unnamed tributary	West Fork Satsop River	Lat 47°18'50", long 123°35'25", in NE¼ sec.17, T.21 N., R.7 W., Grays Harbor County, at Simpson logging road, 3 mi (4.8 km) south of Camp Grisdale, 10.5 mi (16.9 km) northwest of Matlock, and 24 mi (38.6 km) north of Montesano.	.33	1956-77a	3-24-77	2.48
12036800 Wynoochee River	Chehalis River	Lat 47°04'44", long 123°41'57", in NE¼NE¼ sec.5, T.18 N., R.8 W., Grays Harbor County, at county bridge, 1.0 mi (1.6 km) downstream from Helm Creek, 8.5 mi (13.7 km) northwest of Montesano, and at mile 13.7 (22.0 km).	133	---	10- 5-76 11-30-76 2- 1-77 3-24-77 5-19-77 7-12-77 9-23-77	480 516 1,400 1,000 477 359 913
1203800005 Wishkah River	Do.....	Lat 47°04'20", long 123°46'09", in NE¼SW¼ sec.2, T.18 N., R.9 W., Grays Harbor county, at Wishkah Road, 0.1 mi (0.2 km) upstream from East Fork, 1.0 mi (1.6 km) north of Aberdeen Gardens, and at mile 12.3 (19.8 km).	59.9	1956, 1962-64, 1966, 1976	12- 3-76 2- 4-77 3-25-77 5-16-77 6-30-77 7-28-77 9-13-77	126 311 392 187 90.5 60.8 96.8
		Hoquiam River basin				
12038660 East Fork Hoquiam River	Hoquiam River	Lat 47°03'32", long 123°50'04", in NW¼SW¼ sec.8, T.18 N., R.9 W., Grays Harbor County, 0.2 mi (0.3 km) upstream from Berryman Creek, 3.0 mi (4.8 km) west of Aberdeen Gardens, and at mile 7.3 (11.7 km).	25.8	1942-43, 1976	2- 7-77 5-16-77 7-15-77 9-12-77	91.9 72.5 32.5 43.1
		Quillayute River basin				
Soleduck River	Quillayute River	Lat 47°58'10", long 123°51'41", in NE¼NW¼ sec.32, T.29 N., R.9 W., Clallam County, 30 ft (9 m) downstream from Sol Duc Hot Springs drain.	22.7	---	8-10-77	63.0
12042500 Soleduck River	Do.....	Lat 47°57'05", long 124°27'30", in NW¼NE¼ sec.11, T.28 N., R.14 W., Clallam County, at bridge 3.9 mi (6.3 km) west of Forks, and at mile 13.9 (22.4 km).	219	1897, 1898-1902‡, 1962, 1976	10-15-76 12-14-76 2- 9-77 4-13-77 6-24-77 8-11-77	231 826 598 220 529 225

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Waatch River basin				
12043173 Waatch River	Makah Bay (Pacific Ocean)	Lat 48°21'24", long 124°37'42", in NE¼SW¼ sec.15, T.33 N., R.15 W., Clallam County, 0.8 mi (1.3 km) southeast of Neah Bay.	10.7	1976	10-13-76 12-15-76 2- 9-77 4-17-77 6-16-77 8- 4-77	13.5 105 21.3 12.0 7.88 1.57
		Village Creek basin				
12043186 Village Creek	Neah Bay	Lat 48°22'10", long 124°37'40", in NE¼SW¼ sec.10, T.33 N., R.15 W., Clallam County, at road crossing 0.3 mi (0.5 km) above mouth, and 0.3 mi (0.5 km)west of Neah Bay.	0.65	1976	10-13-76 12-15-76 2- 9-77 4- 7-77 6-29-77 8- 4-77	1.17 8.96 1.38 .68 .51 .21
		East Twin River basin				
12043430 East Twin River	Strait of Juan de Fuca	Lat 48°09'49", long 123°56'33", in NW¼SW¼ sec.24, T.31 N., R.10 W., Clallam County, at bridge on State Highway 112, 1,300 ft (396 m) upstream from mouth, and 8.4 mi (13.5 m) southeast of Pysht.	14.0	1962-72‡, 1973-77a	6-15-77	11.3
		Elwha River basin				
12046523 Unnamed tributary f	Elwha West Slough	Lat 48°08'40", long 123°33'17", on south line of SW¼SE¼ sec.27, T.31 N., R.7 W., Clallam County, at road crossing, 2.1 mi (3.4 km) northwest of Port Angeles city limits.	---	1976	11- 2-76 1- 6-77 2- 2-77 3-23-77	0.43 1.42 2.27 1.29
		Snow Creek basin				
12050500 Snow Creek	Port Discovery	Lat 47°56'25", long 122°53'12", in NW¼NE¼ sec.11, T.28 N., R.2 W., Jefferson County, 1,800 ft (549 m) upstream from Andrews Creek, 3.2 mi (5.1 km) south of Uncas, and 4.0 mi (6.4 km) south of Maynard.	11.2	1952-72‡, 1973-77a	6-15-77	6.63
		Hamma Hamma River basin				
12054500 Hamma Hamma River	Hood Canal	Lat 47°35'18", long 123°06'57", in SE¼NW¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, 0.3 mi (0.5 km) downstream from Watson Creek, 4.6 mi (7.4 km) northwest of Eldon, and at mile 6.2 (10.0 km).	51.3	1952-71‡, 1972-77a	4-26-77	479
12054600 Jefferson Creek	Hamma Hamma River	Lat 47°35'00", long 123°06'18", in SE¼SE¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, 0.2 mi (0.3 km) upstream from mouth and 4.0 mi (6.4 km) northwest of Eldon.	21.6	1958-71‡, 1972-77a	4-26-77	126
		Dewatto River basin				
12068500 Dewatto River	Hood Canal	Lat 47°28'10", long 123°01'33", in NE¼SW¼ sec.23, T.23 N., R.3 W., Mason County, 400 ft (122 m) downstream from highway bridge, 2.0 mi (3.2 km) upstream from mouth, and 2.2 mi (3.5 km) northeast of Dewatto.	18.4	1947-54‡, 1955-57, 1958-74‡, 1975-77a	4-28-77	20.1
		Minor Streams tributary to Hood Canal basin				
12069651 Port Gamble Inlet	Port Gamble	Lat 47°47'57", long 122°34'51", in NW¼SW¼ sec.29, T.27 N., R.2 E., Kitsap County, at road crossing 0.7 mi (1.1 km) southwest of Striebels Corner, and 3.8 mi (6.1 km) south of Port Gamble.	5.86	1976	10-27-76 12-21-76 2- 9-77 3-29-77 5-16-77	1.35 1.61 1.27 1.09 1.02
12069660 Unnamed tributary	Do.....	Lat 47°50'30", long 122°33'52", in SE¼SE¼ sec.8, T.27 N., R.2 E., Kitsap County, at road crossing 1.2 mi (1.9 km) southeast of Port Gamble.	.45	1976	10-27-76 12-21-76 2- 9-77 3-29-77	.56 .52 .61 .49
12069663 Unnamed tributary	Do.....	Lat 47°51'16", long 122°33'50", in NE¼SE¼ sec.5, T.27 N., R.2 E., Kitsap County, at road crossing 0.1 mi (0.2 km) north of Little Boston, and 0.8 (1.3 km) east of Port Gamble.	.69	1976	10-27-76 12-21-76 2- 9-76 3-29-77	.27 .28 .30 .27
		Minor Streams tributary to Puget Sound basin				
Unnamed tributary	Port Madison	Lat 47°45'03", long 122°31'27", in NE¼NE¼ sec.15, T.26 N., R.2 E., Kitsap County, Port Madison Indian Reservation, at road crossing in Indianola 0.3 mi (0.5 km) upstream from mouth.	---	---	12-21-76	0.29

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
f Locally known as Bosco Creek.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Minor streams tributary to Puget Sound basin--Continued				
12069710 Grovers Creek	Miller Bay	Lat 47°46'25", long 122°33'23", near south line of NW¼ sec.4, T.26 N., R.2 E., Kitsap County, at road crossing 2.3 mi (3.7 km) northwest of Indianola.	6.45	1947, 1958, 1976	10-26-76 12-20-76 3-29-77 5-18-77	3.19 3.07 5.42 5.45
12069720 Unnamed tributary	Do.....	Lat 47°44'49", long 122°33'32", in SW¼NW¼ sec.16, T.26 N., R.2 E., Kitsap County, at road crossing 1.1 mi (1.8 km) north of Suquamish.	.62	1947, 1958, 1976	10-26-76 12-20-76 2- 9-77 3-29-77	.11 .13 .19 .50
12069721 Unnamed tributary	Do.....	Lat 47°44'51", long 122°33'36", in SW¼NW¼ sec.16, T.26 N., R.2 E., Kitsap County, at road crossing 1.2 mi (1.9 km) north of Suquamish.	.22	1976	10-26-76 12-20-76 2- 9-77 3-29-77	.37 .37 .49 .45
12069731 Port Orchard tributary	Port Orchard	Lat 47°42'45", long 122°34'19", in NW¼SE¼ sec.29, T.26 N., R.2 E., Kitsap County, 200 ft (61 m) downstream from State Highway 305 crossing, 200 ft (61 m) upstream from mouth and 1.6 mi (2.6 km) southwest of Suquamish.	2.35	1976	10-26-76 12-20-76 2- 9-77 3-29-77	.21 .26 .24 .33
		Chico Creek basin				
12072000 Chico Creek	Dyes Inlet	Lat 47°35'28", long 122°42'29", in NE¼NW¼ sec.8, T.24 N., R.1 E., Kitsap County, at highway crossing, 0.5 mi (0.8 km) downstream from Dickerson Creek, and 3.7 mi (6.0 km) northwest of Olympic College in Bremerton.	15.3	1947-50‡, 1961-74‡, 1975-77a	4-28-77	7.29
		Goldsborough Creek basin				
12076500 Goldsborough Creek	Oakland Bay	Lat 47°12'56", long 123°10'52", in NW¼NW¼ sec.22, T.20 N., R.4 W., Mason County, 100 ft (30 m) upstream from road bridge, 3.8 mi (6.1 km) west of Shelton, and 5.5 mi (8.8 km) upstream from mouth.	39.3	1952-71‡, 1972-77a	4-25-77	40.6
		Kennedy Creek basin				
12078400 Kennedy Creek	Totten Inlet	Lat 47°04'37", long 123°07'33", in SW¼NE¼ sec.1, T.18 N., R.4 W., Mason County, 100 ft (30 m) upstream from Kennedy Falls, 2.2 mi (3.5 km) upstream from mouth at Oyster Bay, and 3.9 mi (6.3 km) south of Kamilche.	17.4	1961-71‡, 1972-74, 1976-77a	4-25-77	17.1
		Minor Stream tributary to Eld Inlet basin				
Allison Springs	Eld Inlet	Lat 47°02'37", long 122°59'06", in NE¼SW¼ sec.18, T.18 N., R.2 W., Thurston County, at spring outlet, 0.4 mi (0.6 km) west of McLane School, and 4.0 mi (6.4 km) west of Olympia.	---	---	4- 7-77 6-16-77 8- 8-77	2.99 3.15 3.07
		Deschutes River basin				
Deschutes River	Budd Inlet	Lat 46°47'31", long 122°23'29", in SE¼SW¼ sec.11, T.15 N., R.3 E., Thurston County, 0.1 mi (0.2 km) upstream from mouth of Little Deschutes River, 4.6 mi (7.4 km) southwest of La Grande, and at river mile 43.5 (70.0 km).	23.1	---	2- 8-77 6-10-77 9-12-77	19.5 77.5 17.4
Little Deschutes River	Deschutes River	Lat 46°47'31", long 122°23'19", in SW¼SE¼ sec.11, T.15 N., R.3 E., Thurston County, 0.2 mi (0.3 km) upstream from mouth and 4.2 mi (6.8 km) southwest of La Grande.	7.89	---	2- 8-77 6-10-77 9-12-77	2.09 5.23 1.69
Thurston Creek	Do.....	Lat 46°47'49", long 122°26'26", in NW¼SW¼ sec.9, T.15 N., R.3 E., Thurston County, 200 ft (61 m) upstream from Weyerhauser gage, 200 ft (61 m) upstream from logging road crossing and 6.5 mi (10.5 km) southwest of La Grande.	---	---	2- 7-77 6-10-77 9-12-77	2.15 6.68 2.64
Johnson Creek	Do.....	Lat 46°47'38", long 122°26'46", in SE¼SE¼ sec.8, T.15 N., R.3 E., Thurston County, at logging road crossing at Weyerhauser gage and 6.6 mi (10.6 km) southwest of La Grande.	---	---	2- 7-77 6-10-77 9-12-77	.59 1.13 .33
12078850 Deschutes River	Budd Inlet	Lat 46°47'44", long 122°27'22", in SE¼SW¼ sec.8, T.15 N., R.3 E., Thurston County, at private bridge at Trails End Estates, 1.0 mi (1.6 km) upstream from Mitchell Creek, 7.3 mi (11.7 km) southwest of La Grande.	44.1	1949-50, 1963, 1965-71	2- 8-77 6-10-77 9-12-77	23.4 98.5 22.2
12078900 Mitchell Creek	Deschutes River	Lat 46°47'26", long 122°28'00", in NE¼NE¼ sec.18, T.15 N., R.3 E., Thurston County, at logging road crossing 0.2 mi (0.3 km) upstream from mouth, 7.7 mi (12.4 km) southwest of La Grande.	8.54	1963, 1965-71	2- 7-77 6-10-77 9-12-77	4.17 14.7 2.73
Fall Creek	Do.....	Lat 46°48'11", long 122°30'23", in SW¼NW¼ sec.12, T.15 N., R.2 E., Thurston County, at logging road crossing, 7.8 mi (12.6 km) southeast of Vail.	---	---	2- 7-77 6-10-77 9-13-77	.69 2.90 .33

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Deschutes River basin--Continued				
Pipeline Creek	Deschutes River	Lat 46°49'44", long 122°33'37", in center of sec. 33, T.16 N., R.2 E., Thurston County, at old logging road crossing and 4.8 mi (7.7 km) southeast of Vail.	---	---	2- 7-77 6-13-77 9-13-77	0.31 1.15 .14
Lake Lawrence Outlet	Do.....	Lat 46°50'54", long 122°34'55", in NE¼NW¼ sec.29, T.16 N., R.2 E., Thurston County, at county road crossing, 0.1 mi (0.2 km) from Lake Lawrence and 5.8 mi (9.3 km) southeast of Rainier.	3.35	1974	2- 7-77 6-10-77 9-13-77	0 0 0
Reichel Lake Outlet	Do.....	Lat 46°50'23", long 122°39'10", in NW¼SW¼ sec.26, T.16 N., R.1 E., Thurston County, at Vail Loop Road crossing 0.5 mi (0.8 km) southeast of Vail and 3.2 mi (5.1 km) downstream from Reichel Lake	---	---	2- 7-77 6-10-77 9-13-77	1.66 4.73 .91
12079000 Deschutes River	Budd Inlet	Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, at county road crossing, 0.4 mi (0.6 km) downstream from outlet of Reichel Lake, 2.7 mi (4.3 km) southeast of Rainier, and at mile 25.9 (41.7 km).	89.8	1949-75‡, 1976-77a, 1976	2- 7-77 6-10-77 9-13-77	45.8 134 39.7
12079382 Offutt Lake Outlet	Deschutes River	Lat 46°55'13", long 122°48'46", in NE¼NW¼ sec.33, T.17 N., R.1 W., Thurston County, at Waldrick Road crossing, 0.3 mi (0.5 km) downstream from Offutt Lake, and 3.5 mi (5.6 km) southeast of East Olympia.	1.85	1972-73	2- 8-77 6-10-77 9-13-77	0 0 0
12079400 Deschutes River	Budd Inlet	Lat 46°56'43", long 122°50'55", in NW¼SE¼ sec.19, T.17 N., R.1 W., Thurston County, at Rich Road crossing, 0.5 mi (0.8 km) upstream from Spurgeon Creek, 4.4 mi (7.1 km) southeast of Tumwater, and at mile 11.0 (17.7 km).	127	---	2- 8-77 6-10-77 9-13-77	72.7 173 58.7
12079500 Spurgeon Creek	Deschutes River	Lat 46°56'58", long 122°50'35", on center of west line NW¼ sec.20, T.17 N., R.1 W., Thurston County, at Rich Road crossing, 0.25 mi (0.40 km) upstream from mouth and 7.2 mi (11.6 km) southeast of Olympia.	10.8	1950‡, 1951	2- 8-77 6-10-77 9-13-77	8.73 9.17 5.37
12079980 Deschutes River	Budd Inlet	Lat 46°59'43", long 122°52'47", in NE¼NW¼ sec.1, T.17 N., R.2 W., Thurston County, at Henderson Boulevard Bridge 1.0 mi (1.6 km) east of Tumwater.	---	1972	10-15-76 12-10-76 2-16-77 7-27-77	97.2 126 135 71.7
12080000 Deschutes River	Do.....	Lat 47°00'05", long 122°53'40", in NW¼SE¼ sec.35, T.18 N., R.2 W., Thurston County, 1.5 mi (2.4 km) upstream from mouth, 2.5 mi (4.0 km) south of Olympia.	160	1945-55‡, 1957-64‡, 1955-57a	2- 8-77 9-13-77	100 77.6
12080010 Deschutes River	Do.....	Lat 47°00'42", long 122°54'07", in NW¼ Land Grant 60, T.18 N., R.2 W., Thurston County, at "E" Avenue Bridge in Tumwater, 0.2 mi (0.3 km) upstream from Capitol Boulevard and at mile 2.4 (3.9 km).	d162	1971-72 1975	10-15-76 12-10-76 2-16-77 4-18-77 6-10-77 7-27-77	103 131 143 194 206 77.8
		Nisqually River basin				
12090200 Muck Creek	Nisqually River	Lat 47°00'20", long 122°32'32", in SW¼NW¼ sec.34, T.18 N., R.2 E., Pierce County, 0.3 mi (0.5 km) downstream from Muck Lake at north edge of Roy.	86.8	1949, 1956-72‡, 1973-76a, 1975-76	10-13-76 11-11-76 1-11-77 3-18-77 5-12-77 6- 9-77 7- 8-77 8- 8-77	0.65 .63 1.51 34.0 6.78 13.3 1.43 0
12090205 Muck Creek	Do.....	Lat 46°59'49", long 122°37'37", in SW¼SW¼ sec.36, T.18 N., R.1 E., Pierce County, Fort Lewis Military Reservation, at bridge 500 ft (152 m) upstream from mouth, and 3.8 mi (6.1 km) west of Roy.	92.0	1975-76	10-13-76 11-11-76 1-11-76 3-18-77 5-12-77 6- 9-77 7- 8-77 8- 8-77	5.19 2.32 .61 30.4 13.8 15.1 9.84 6.19
		Judd Creek basin				
12091700 Judd Creek	Quartermaster Harbor	Lat 47°24'40", long 122°28'18", in NE¼SW¼ sec.7, T.22 N., R.3 E., King County, at culvert at 216th Street S.W., 1.0 mi (1.6 km) upstream from mouth, and 1.5 mi (2.4 km) north of Burton.	4.41	1969-75‡, 1976	9-22-77	1.54
		Puyallup River basin				
12095000 South Prairie Creek	Carbon River	Lat 47°08'23", long 122°05'28", in NE¼NW¼ sec.18, T.19 N., R.6 E., Pierce County, 30 ft (9 m) downstream from railroad bridge, 200 ft (61 m) upstream from bridge on State Highway 162, 0.3 mi (0.5 km) east of South Prairie and at mile 5.9 (9.5 km).	79.5	1950-71‡, 1972-77a	4-12-77	182

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
d Recomputed.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Duwamish River basin				
12107500 Green River	Duwamish River	Lat 47°16'57", long 122°03'13", in SW¼NW¼ sec.28, T.21 N., R.6 E., King County, at highway bridge 0.8 mi (1.3 km) upstream from Newaukum Creek and 3 mi (4.8 km) southeast of Black Diamond.	285	1940-48‡, 1962, 1965, 1969, 1976	8- 1-77	192
Newaukum Creek	Green River	Lat 47°14'34", long 122°02'17", in NE¼NE¼ sec.9, T.20 N., R.6 E., King County, at 400th Street road crossing, 2.8 mi ((4.5 km) northwest from Enumclaw.	---	---	8- 3-77	14.7
12113340 Green River	Duwamish River	Lat 47°24'45", long 122°15'49", in NE¼NW¼ sec.11, T.22 N., R.4 E., King County, at 212th Street bridge, 2.5 mi (4.0 km) northwest of Kent City Hall, 2.7 mi (4.3 km) southeast of main terminal building of Sea-Tac Airport, and at mile 18.3 (29.4 km).	433	---	8- 3-77	269
		Lake Washington basin				
12118500 Rock Creek	Cedar River	Lat 47°22'48", long 122°00'58", in SE¼NE¼ sec.22, T.22 N., R.6 E., King County, 50 ft (15 m) upstream from culvert crossing, 650 ft (198 m) upstream from mouth, and 2.2 mi (3.5 km) southeast of Maple Valley.	12.6	1945-73‡	9-28-77	1.96
12119600 May Creek	Lake Washington	Lat 47°31'48", long 122°12'00", in NE¼NW¼ sec.32, T.24 N., R.5 E., King County, at highway crossing, 0.21 mi (0.3 km) upstream from mouth, and 2 mi (3.2 km) north of Renton.	12.7	1964-71‡, 1973-77a	9-23-77	12.8
12119700 Coal Creek	Do.....	Lat 47°34'00", long 122°10'45", in NW¼SW¼ sec.16, T.24 N., R.5 E., King County, 0.8 mi (1.3 km) upstream from mouth and 3 mi (4.8 km) south of Bellevue.	6.8	1964-68‡, 1969-77a	9-19-77	2.99
12124000 Evans Creek	Sammamish River	Lat 47°40'31", long 122°04'48", on north line NE¼NE¼ sec.7, T.25 N., R.6 E., King County, 25 ft (8 m) upstream from county bridge, 2.0 mi (3.2 km) east of Redmond, and at mile 0.8 (1.3 km).	13.0	1955-76‡	9-16-77	7.91
12126000 North Creek	Do.....	Lat 47°47'30", long 122°11'47", near SE corner SW¼ sec.29, T.27 N., R.5 E., Snohomish County, 2.0 mi (3.2 km) north of Bothell and at mile 2.7 (4.3 km).	24.6	1945-72‡, 1973-74a	9-16-77	10.3
12118510 Cedar River	Lake Washington	Lat 47°24'22", long 122°02'18", in NE¼SE¼ sec.9, T.22 N., R.6 E., King County, on State Highway 169 at Maple Valley and at mile 14.5 (23.3 km).	151	1973	8- 1-77	82.1
		Snohomish River basin				
12137230 Sultan River	Skykomish River	Lat 47°58'47", long 121°34'25", in SE¼SW¼ sec.19, T.29 N., R.10 E., Snohomish County, at bridge, 0.4 mi (0.6 km) downstream from Elk Creek, 13.6 mi (21.9 km) northeast of Sultan, and at mile 22.4 (36.0 km).	---	---	12- 1-76 1-18-77 1-19-77 4- 8-77 5-18-77 7-28-77 9-30-77	104 3,210 567 686 215 59.0 177
12137290 South Fork Sultan River	Do.....	Lat 47°56'52", long 121°37'33", in NE¼NE¼ sec.3, T.28 N., R.9 E., Snohomish County, at bridge, 10.5 mi (16.9 km) northeast of Sultan, and at mile 2.3 (3.7 km).	---	---	11-23-76 1-18-77 4- 8-77 5-19-77 7-28-77 9-30-77	50.9 1,710 276 89.0 16.6 90.5
12141100 Skykomish River	Snohomish River	Lat 47°51'08", long 121°57'29", in NE¼NE¼ sec.12, T.27 N., R.6 E., Snohomish County, at State Highway 203 bridge, at south city limits of Monroe.	834	1922^{g}, 1951^{g}, 1955, 1958-67^{g} 1959, 1967-74	9-27-76 3-31-77 7-25-77 9-23-77	^{c} 1,560 3,780 1,330 2,880
12145000 Tokul Creek	Snoqualmie River	Lat 47°33'13", long 121°50'09", in SE¼NW¼ sec.19, T.24 N., R.8 E., King County, 200 ft (61 m) upstream from fish hatchery diversion, 600 ft (183 m) downstream from State Highway 522, 1.8 mi (2.9 km) northeast of Snoqualmie.	32.2	1907-14‡, 1926, 1927, 1929-31‡, 1945‡, 1957, 1959-61a, 1962-76	11-23-76 1-26-77 3-29-77 5-26-77 7-28-77	35.8 90.0 119 88.8 29.8
12152800 Pilchuck River	Do.....	Lat 48°03'12", long 122°01'22", in SE¼SW¼ sec.27, T.30 N., R.6 E., Snohomish County, at county bridge 11.5 mi (18.5 km) north of Snohomish.	---	---	9-28-76 11-30-76 1-25-77 3-24-77 5-20-77 7-21-77 9-20-77	^{c}65.4 166 216 564 251 73.8 128

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
c Not previously published.
g Stage only.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Snohomish River basin--Continued				
12155400 Pilchuck River	Snohomish River	Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, at bridge on U.S. Highway 2, at the east city limits of Snohomish, and at mile 1.9 (3.1 km).	132	1971-72, 1974	8- 9-77	58.8
					9-20-77	150
12157000 Quilceda Creek	Ebey Slough	Lat 48°06'17", long 122°09'43", in NE¼NE¼ sec.9, T.30 N., R.5 E., Snohomish County, 150 ft (46 m) downstream from Middle Fork 3.5 mi (5.6 km) north of Marysville.	15.4	1946-69‡, 1975-76	10- 5-76	6.57
					11- 3-76	8.02
					12- 6-76	7.95
					1- 4-77	10.7
					2-15-77	12.2
					3- 7-77	36.4
					4- 4-77	24.6
					5- 4-77	44.3
					6- 1-77	50.8
					7- 6-77	7.26
					8- 3-77	4.40
					9- 6-77	6.30
12157020 West Fork Quilceda Creek	Quilceda Creek	Lat 48°06'03", long 122°11'05", in SE¼NW¼ sec.8, T.30 N., R.5 E., Snohomish County, at county road crossing 0.5 mi (0.8 km) west of Kruse.	9.41	1946-47‡, 1957, 1959-60, 1975-76	10- 5-76	2.08
					11- 3-76	2.75
					12- 6-76	3.01
					1- 4-77	5.14
					2-15-77	4.97
					3- 7-77	21.0
					4- 4-77	11.3
					5- 4-77	20.1
					6- 1-77	43.7
					7- 6-77	2.38
					8- 3-77	1.88
					9- 6-77	2.11
12157030 Unnamed tributary	Do.....	Lat 48°04'34", long 122°11'17" (revised), in NE¼NE¼ sec.20, T.30 N., R.5 E., Snohomish County, at road crossing at Boeing Test Facility perimeter boundary 0.8 mi (1.3 km) upstream from mouth and 1.4 mi (2.3 km) north of Marysville.	2.88	1975-76	10- 5-76	.76
					11- 3-76	.79
					12- 6-76	1.20
					1- 4-77	1.27
					2-15-77	1.35
					3- 7-77	4.06
					4- 4-77	2.89
					5- 4-77	4.16
					6- 1-77	5.89
					7- 6-77	.62
					8- 3-77	.72
					9- 6-77	.87
12157035 Sturgeon Creek	Do.....	Lat 48°03'27", long 122°11'47" (revised), in NE¼SW¼ sec.29, T.30 N., R.5 E., Snohomish County, at end of "Old Tulalip Road" 0.3 mi (0.5 km) upstream from mouth and 0.6 mi (1.0 km) west of Marysville.	1.87	1975-76	10- 6-76	.73
					11- 4-76	.85
		Minor Streams tributary to Possession Sound basin				
12157140 Mission Creek below John Sam Lake	Tulalip Bay	Lat 48°06'42", long 122°14'52", in SE¼SE¼ sec.2, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, at road crossing 200 ft (61 m) west of lake outlet, 3.6 mi (5.8 km) northeast of Tulalip.	.33	1974-76	10- 5-76	0
					11- 3-76	0
					12- 6-76	0
					1- 4-77	0
					2-15-77	0
					3- 7-77	0
					4- 4-77	.004
					5- 4-77	0
					6- 1-77	[e]<.01
					7- 6-77	0
					8- 3-77	0
					9- 6-77	0
12157150 Mission Creek	Do.....	Lat 48°05'08", long 122°14'50", in NW¼SW¼ sec.13, T.30 N., R.' E., Snohomish County, Tulalip Indian Reservation, 0.2 mi (0.3 km) upstream from unnamed tributary and 2.3 mi (3.7 km) northeast of Tulalip.	1.34	1975-76	10- 5-76	.67
					11- 4-76	.74
					12- 6-76	.81
					1- 5-77	.57
					2-16-77	.64
					3- 7-77	1.02
					4- 5-77	.69
					5- 5-77	1.41
					6- 2-77	.87
					7- 6-77	.64
					8- 3-77	.60
					9- 7-77	.68
12157170 Unnamed tributary	Mission Creek	Lat 48°05'00", long 122°14'58", in NE¼SE¼ sec.14, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, 0.3 mi (0.5 km) northwesterly on road near south corner of sections 13 and 14 and 100 ft (30 m) upstream from mouth and 2.1 mi (3.4 km) northeast of Tulalip.	1.33	1975-76	10- 5-76	.02
					11- 4-76	.10

‡ Operated as continuous-record station.
e Estimated.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Minor Streams tributary to Possession Sound basin--Continued				
12157202 Unnamed tributary	Mission Creek	Lat 48°05'15", long 122°13'37", in SE¼NW¼ sec.13, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, 1,200 ft (366 m) downstream from Ross Lake, and 3.2 mi (5.2 km) northeast of Tulalip.	0.74	1974-76	10- 5-76	0
					11- 3-76	0
					12- 6-76	0
					1- 4-77	0
					2-15-77	0
					3- 7-77	0
					4- 4-77	.07
					5- 4-77	.06
					6- 1-77	.14
					7- 6-77	0
					8- 3-77	0
					9- 6-77	0
12157210 Unnamed tributary	Do.....	Lat 48°04'45", long 122°14'36", in NW¼NW¼ sec.24, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, at road crossing, 2.4 mi (3.9 km) northeast of Tulalip.	1.57	1975-76	10- 5-76	.33
					11- 4-76	.36
					12- 6-76	.35
					1- 5-77	.34
					2-15-77	.42
					3- 7-77	.53
					4- 5-77	.40
					5- 5-77	.87
					6- 2-77	.62
					7- 6-77	.30
					8- 3-77	.24
					9- 7-77	.34
12157247 Mission Creek	Tulalip Bay	Lat 48°03'13", long 122°14'52", in SE¼SE¼ sec.26, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation 1.3 mi (2.1 km) northwest of Priest Point Grange.	6.58	1975-76	10- 6-76	1.02
					11- 4-76	1.98
					1- 5-77	2.54
12158001 Tulalip Creek	Do.....	Lat 48°07'24", long 122°18'24", in NE¼NW¼ sec.4, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, at Fire Trail Road 0.3 mi (0.5 km) southwest of Lake Shoecraft, and 4.0 mi (6.4 km) north of Tulalip.	6.12	1946, 1957, 1972, 1974-76	10- 5-76	.01
					11- 3-76	<.01
					12- 6-76	0
					1- 4-77	0
					2-15-77	.10
					3- 7-77	1.38
					4- 4-77	2.24
					5- 5-77	2.16
					6- 1-77	2.84
					7- 6-77	.02
					8- 3-77	.03
					9- 6-77	0
12158008 Tulalip Creek below Weallup Lake	Do.....	Lat 48°06'43", long 122°17'58", in SW¼SE¼ sec.4, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, at road crossing 200 ft (61 m) downstream from Weallup Lake and 3.2 mi (5.2 km) north of Tulalip.	8.31	1974-76	10- 5-76	.01
					11- 3-76	<.01
					12- 6-76	0
					1- 4-77	0
					2-15-77	.01
					3- 7-77	.17
					4- 4-77	2.44
					5- 4-77	.64
					6- 1-77	3.20
					7- 6-77	.29
					8- 3-77	.17
					9- 6-77	.09
12158010 Tulalip Creek	Do.....	Lat 48°05'52", long 122°17'15", in SW¼SW¼ sec.10, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, 0.5 mi (0.8 km) upstream From East Branch, and 2.2 mi (3.5 km) north of Tulalip.	9.74	1975-76	10- 5-76	4.52
					11- 3-76	1.80
					12- 6-76	5.37
					1- 5-77	3.96
					2-15-77	4.15
					3- 7-77	4.53
					4- 5-77	6.01
					5- 5-77	8.03
					6- 1-77	8.55
					7- 6-77	4.17
					8- 3-77	3.76
					9- 7-77	4.00
12158025 East Branch Tulalip Creek	Tulalip Creek	Lat 48°06'47", long 122°15'45", in SE¼SW¼ sec.2, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, at old logging road 400 ft (122 m) upstream from Mary Shelton Lake and 3.5 mi (5.6 km) north of Tulalip.	.80	1974-76	10- 5-76	0
					11- 3-76	0
					12- 6-76	0
					1- 4-77	0
					2-15-77	0
					3- 7-77	0
					4- 4-77	0
					5- 4-77	0
					6- 1-77	.11
					7- 6-77	0
					8- 3-77	0
					9- 6-77	0

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Minor Streams tributary to Possession Sound--Continued				
12158030 East Branch Tulalip Creek	Tulalip Creek	Lat 48°06'13", long 122°16'27", in SE¼NE¼ sec.10, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, 1,100 ft (335 m) upstream from reservoirs and 2.7 mi (4.3 km) north of Tulalip.	1.50	1960, 1975-76	10- 5-76 11- 4-76 1- 5-77	1.07 1.22 1.34
12158032 East Branch Tulalip Creek	Do.....	Lat 48°05'33", long 122°16'42", in NW¼NE¼ sec.15, T.30 N., R.4 E., Snohomish County, Tulalip Indian Reservation, at road crossing 1.9 mi (3.1 km) north of Tulalip.	1.75	1960, 1975-76	10- 5-76 11- 4-76 12- 6-76 1- 5-77 2-15-77 3- 7-77 4- 5-77 5- 5-77 6- 2-77 7- 6-77 8- 3-77 9- 7-77	2.13 2.19 2.23 2.02 2.17 2.78 2.22 3.88 2.52 2.12 2.03 1.97
		Stillaguamish River basin				
12167700 Stillaguamish River	Port Susan	Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, adjacent to south bound bridge on U.S. Highway I-5, 1.5 mi (2.4 km) east of Silvana, 6.7 mi (10.8 km) downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1 (17.9 km).	557	1974-75‡	10-13-76 12-13-76 3- 4-77 4-11-77 6-23-77 8-16-77	1,110 2,760 2,610 3,800 1,620 511
		Minor Streams tributary to Skagit Bay basin				
12200782 Unnamed tributary	Skagit Bay	Lat 48°23'47", long 122°32'03", in SW¼SW¼ sec.34, T.34 N., R.2 E., Skagit County, at road crossing 0.6 mi (1.0 km) southeast of Snee-oosh Beach and 1.8 mi (2.9 km) west of La Conner.	---	1976	10-15-76 11-30-76 12-16-76	0.09 .12 .15
		Minor Streams tributary to Padilla Bay basin				
12200791 Unnamed tributary	Swinomish Channel	Lat 48°25'12", long 122°30'03", in NW¼SW¼ sec.24, T.34 N., R.2 E., Skagit County, 2.0 mi (3.2 km) north of La Conner.	---	1976	10-15-76 11-30-76 12-16-76	0.15 .13 .13
		Samish River basin				
12201500 Samish River	Samish Bay	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, 500 ft (152 m) downstream from bridge on U.S. Highway 99, 0.5 mi (0.8 km) downstream from Friday Creek, 5.0 mi (8.0 km) north of Burlington, and at mile 10.3 (16.6 km).	87.8	1944-71‡, 1972-74	9-30-76 5-19-77 8-15-77 9-30-77	c28.9 171 24.1 30.0
		Minor basins Between Klickitat and White Salmon Rivers				
Major Creek	Columbia River	Lat 45°42'54", long 121°21'03", in NW¼SE¼ sec.30, T.3 N., R.12 E., Klickitat County, at State Route 14 road crossing, 0.4 mi (0.6 km) upstream from mouth and 5.5 mi (8.8 km) east of Bingen.	---	---	2- 7-77 6-14-77 9-14-77	0.81 0 0
Catherine Creek	Do.....	Lat 45°42'38", long 121°21'30", in SW¼SW¼ sec.30, T.3 N., R.12 E., Klickitat County, at State Route 14 road crossing, 0.3 mi (0.5 km) upstream from mouth and 5.1 mi (8.2 km) east of Bingen.	---	---	2- 7-77 6-14-77 9-14-77	0 0 0
		White Salmon River basin				
Cascades Creek	White Salmon River	Lat 46°06'20", long 121°36'14", in SE¼SW¼ sec.7, T.7 N., R.10 E., Skamania County, Gifford Pinchot National Forest, at logging road (N712) crossing, 0.2 mi (0.3 km) upstream from mouth and 8.2 mi (13.2 km) northwest of Trout Lake.	16.4	---	2- 8-77 6-14-77 9-14-77	22.7 75.7 36.2
White Salmon River	Columbia River	Lat 46°01'00", long 121°31'30", in SW¼SW¼ sec.11, T.6 N., R.10 E., Klickitat County, 200 ft (61 m) upstream from N 80 road crossing, 1.3 mi (2.1 km) northeast of Trout Lake.	---	---	2- 8-77 6-14-77 9-14-77	100 178 96.3
Ninefoot Creek	White Salmon River	Lat 46°05'46", long 121°36'32", in SW¼NW¼ sec.18, T.7 N., R.10 E., Skamania County, Gifford Pinchot National Forest, 0.2 mi (0.3 km) upstream from mouth, 7.9 mi (12.7 km) northwest of Trout Lake.	---	1973	2-15-77 6- 1-77 8-18-77	1.58 5.83 1.16
Gotchen Creek	Do.....	Lat 46°01'44", long 121°31'21", in NE¼NW¼ sec.11, T.6 N., R.10 E., Klickitat County, at road crossing 2.2 mi (3.5 km) northeast of Trout Lake.	---	---	2- 8-77 6-14-77 9-14-77	0 0 0
Mosquito Creek	Trout Lake Creek	Lat 46°07'35", long 121°45'12", in NW¼NW¼ sec.1, T.7 N., R.8 E., Skamania County, Gifford Pinchot National Forest, at Road N 819 crossing below Mosquito Lake, 14.2 mi (22.8 km) northwest of Trout Lake.	---	1973	2-15-77 5-31-77 8-18-77	1.69 14.8 .79

‡ Operated as continuous-record station.
c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		White Salmon River basin--Continued				
Meadow Creek	Cultus Creek	Lat 46°05'06", long 121°42'26", in NE¼NW¼ sec.20, T.7 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at Road N 88 crossing, 10.8 mi (17.4 km) northwest of Trout Lake.	---	1973	2-15-77 5-31-77 8-18-77	12.7 42.2 5.94
Cultus Creek	Trout Lake Creek	Lat 46°04'28", long 121°42'16", in SE¼SW¼ sec.20, T.7 N., R.9 E., Skamania County, Gifford Pinchot National Forest at Road N 88 crossing, 10.0 mi (16.1 km) northwest of Trout Lake.	---	1973	2-15-77 5-31-77 8-18-77	6.82 52.4 1.77
Little Goose Creek	Do.....	Lat 46°03'30", long 121°40'13", in SW¼SW¼ sec.27, T.7 N., R.9 E., Skamania County, Gifford Pinchot National Forest at Road N 88 crossing, 0.8 mi (1.3 km) upstream from mouth, 7.8 mi (12.6 km) northwest of Trout Lake.	---	1973	2-15-77 5-31-77 8-18-77	5.21 25.5 3.66
Smoky Creek	Little Goose Creek	Lat 46°03'30", long 121°40'13", in SW¼SW¼ sec.27, T.7 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at Road N 88 crossing, 100 ft (30 m) upstream from mouth, and 7.8 mi (12.6 km) northwest of Trout Lake.	---	---	2-15-77 5-31-77 8-18-77	1.42 19.3 .17
14121500 Trout Lake Creek	White Salmon River	Lat 46°00'15", long 121°32'18", in SE¼SW¼ sec.15, T.6 N., R.10 E., Klickitat County, 150 ft (46 m) upstream from road crossing, 2.0 mi (3.2 km) upstream from mouth, 0.6 mi (1.0 km) northwest of Trout Lake.	69.3	1909-12‡, 1913, 1959-60‡, 1973	2- 8-77 2-15-77 5-31-77 6-14-77 8-18-77 9-14-77	43.3 78.1 190 129 26.1 32.3
14122800 Phelps Creek	Do.....	Lat 45°53'01", long 121°31'13", in NE¼NW¼ sec.35, T.5 N., R.10 E., Klickitat County, at State Highway 141, 2.5 mi (4.0 km) north of B-Z corner.	1.88	1966-75a	2-17-77 5-31-77 8-18-77	.15 .59 .00
Gilmer Creek	Do.....	Lat 45°51'30", long 121°30'12", in SW¼SW¼ sec.1, T.4 N., R.10 E., Klickitat County, at old road crossing 0.6 mi (1.0 km) northeast of B-Z corner.	11.6	1909	2- 8-77 6-14-77 9-14-77	1.63 .33 .07
14123030 Rattlesnake Creek	Do.....	Lat 45°50'39", long 121°24'51", in SE¼SW¼ sec.10, T.4 N., R.11 E., Klickitat County, at road bridge, 4.7 mi (7.6 km) northeast of Husum.	41.1	1969-75	2-15-77 8-18-77	2.70 0
Rattlesnake Creek	Do.....	Lat 45°47'50", long 121°29'02", in NW¼NW¼ sec.31, T.4 N., R.11 E., Klickitat County, 50 ft (15 m) upstream from mouth at Husum.	55.7	1911, 1913, 1973	2- 8-77 2-16-77 6- 1-77 6-14-77 8-18-77 9-14-77	3.57 5.23 4.51 1.72 .59 .80
Spring Creek	Do.....	Lat 45°47'51", long 121°30'02", in SW¼SW¼ sec.25, T.4 N., R.10 E., Klickitat County, 300 ft (91 m) upstream from mouth, 0.8 mi (1.3 km) west of Husum.	2.30	1909, 1973	2-15-77 6- 1-77 8-18-77	11.0 12.7 11.7
Buck Creek	Do.....	Lat 45°46'53", long 121°30'54", in NW¼NE¼ sec.2, T.3 N., R.10 E., Skamania County, 100 ft (30 m) upstream from mouth, 1.8 mi (2.9 km) southwest of Husum.	13.9	1913, 1973	2-16-77 2- 8-77 6- 1-77 6-14-77 8-18-77 9-14-77	6.08 5.43 5.42 3.39 1.37 2.12
		Little White Salmon River basin				
Lusk Creek	Little White Salmon River	Lat 45°51'47", long 121°38'24", in SE¼NW¼ sec.2, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 0.2 mi (0.3 km) upstream from mouth, 5.7 mi (9.2 km) north of Willard.	---	1973	2-16-77 6- 1-77 8-17-77	4.53 9.42 1.93
Berry Creek	Do.....	Lat 45°51'12", long 121°39'15", in NW¼NE¼ sec.10, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at county road crossing, 600 ft (180 m) upstream from mouth, 5.1 mi (8.2 km) northwest of Willard.	---	1973	2-16-77 6- 1-77 8-17-77	1.95 4.45 1.29
Little White Salmon River	Columbia River	Lat 45°50'43", long 121°39'30", in NE¼SW¼ sec.10, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at N 443 road crossing, 4.7 mi (7.6 km) northwest of Willard.	---	---	2- 8-77 6-14-77 9-14-77	8.93 19.6 8.23
North Fork Cabbage Creek	Cabbage Creek	Lat 45°49'41", long 121°40'04", in SW¼SW¼ sec.15, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 200 ft (61 m) upstream from mouth, 3.7 mi (6.0 km) northwest of Willard.	---	1973	6- 1-77 8-17-77	0 0
Cabbage Creek	Little White Salmon River	Lat 45°49'38", long 121°39'59", in SW¼SW¼ sec.15, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 300 ft (91 m) upstream from mouth, 3.5 mi (5.8 km) northwest of Willard.	3.82	1946, 1973	2-16-77 6- 1-77 8-17-77	2.07 2.73 .92
Unnamed tributary	Do.....	Lat 45°49'22", long 121°39'02", in NE¼NE¼ sec.22, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at county road crossing, 0.3 mi (0.5 km) upstream from mouth, 3.0 mi (4.8 km) northwest of Willard.	---	1973	2-16-77 6- 1-77 8-17-77	e.6 .25 .00

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
e Estimated.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Little White Salmon River--Continued						
Wilson Creek	Little White Salmon River	Lat 45°48'34", long 121°38'36", in NE¼NW¼ sec.26, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at county road crossing, 500 ft (150 km) upstream from mouth, 2.0 mi (3.2 km) northwest of Willard.	---	1973	2-16-77 6- 1-77 8-17-77	0.70 .97 0
14124000 Little White Salmon River	Columbia River	Lat 45°47'56", long 121°38'20", in SE¼SW¼ sec.26, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) upstream from Moss Creek, 1.3 mi (2.1 km) northwest of Willard.	39.2	1910, 1941-42, 1944-49†, 1973	2- 8-77 2-16-77 6- 2-77 6-14-77 8-17-77 9-14-77	14.2 20.1 32.6 28.4 7.21 10.1
Moss Creek	Little White Salmon River	Lat 45°47'54", long 121°38'19", in SE¼SW¼ sec.26, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 50 ft (15 m) upstream from mouth, 1.3 mi (2.1 km) northwest of Willard.	1.05	1941, 1973	2- 8-77 2-16-77 6- 2-77 6-14-77 8-17-77 9-14-77	10.9 4.63 107 96.8 37.8 18.6
Lava Creek	Do.....	Lat 45°46'56", long 121°37'44", in SE¼SE¼ sec.35, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at county road, 0.2 mi (0.3 km) upstream from mouth at Willard.	72.5 b	1910, 1928-31, 1946, 1973	2- 8-77 2-16-77 6- 2-77 6-14-77 8-17-77 9-14-77	1.49 1.71 50.7 49.0 3.42 1.92
14125200 Rock Creek	Do.....	Lat 45°43'08", long 121°38'45", in NW¼NW¼ sec.14, T.3 N., R.9 E., Skamania County, at county road, 0.4 mi (0.6 km) upstream from mouth, 2.2 mi (3.5 km) southwest of Willard.	4.10	1949-67a, 1973	2-16-77 6- 2-77 8-17-77	2.48 7.08 1.22
Minor basin Between Little White Salmon and Wind Rivers						
14126300 Columbia River tributary	Columbia River	Lat 45°42'50", long 121°46'40", in SE¼ sec.27, T.3 N., R.8 E., Skamania County, at U.S. Highway 830, 0.3 mi (0.5 km) west of Home Valley Post Office.	0.54	1950-70a, 1973	2-16-77 6- 1-77 8-16-77	0.29 .39 e.02
Wind River basin						
Wind River	Columbia River	Lat 45°54'35", long 121°56'54", in NW¼NE¼ sec.21, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 200 ft (61 m) upstream from Falls Creek, 14.4 mi (23.2 km) northwest of Carson.	---	1973	2-15-77 5- 9-77 8-15-77	28.7 113 5.89
14126500 Falls Creek	Wind River	Lat 45°54'24", long 121°56'15", in SE¼NE¼ sec.20, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 0.6 mi (1.0 km) upstream from mouth, 7 mi (11.3 km) northwest of Stabler.	22.2	1929, 1944-48†, 1973	2- 7-77 6-14-77 9-14-77	15.0 46.7 12.8
Falls Creek	Do.....	Lat 45°54'33", long 121°56'52", in NW¼NE¼ sec.21, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 200 ft (61 m) upstream from mouth, 14.4 mi (23.2 km) northwest of Carson.	22.2	1929, 1944-48†, 1973	2-15-77 5- 9-77 5-31-77 8-15-77	19.3 71.1 71.6 11.4
Wind River	Columbia River	Lat 45°54'17", long 121°56'58", in SW¼ sec.21, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 0.3 mi (0.5 km) downstream from Falls Creek, and 14.1 mi (22.7 km) northwest of Carson at mile 21.6 (34.8 km).	56.4	1973	2-15-77 5- 9-77 5-31-77 8-15-77	48.3 182 215 15.6
Ninemile Creek	Wind River	Lat 45°53'28", long 121°57'24", in NW¼SW¼ sec.29, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at forest road N 505, 0.2 mi (0.3 km) upstream from mouth.	---	---	2-15-77 5- 9-77 5-31-77 8-15-77	0 7.81 6.92 0
Dry Creek	Do.....	Lat 45°52'50", long 121°58'36", in NW¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 1.0 mi (1.6 km) east of Government Mineral Springs and 5.9 mi (9.5 km) northwest of Stabler.	15.5	---	2- 7-77 6-14-77 9-14-77	0 0 0
Wind River	Columbia River	Lat 45°52'50", long 121°58'38", in NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) downstream from Dry Creek, and 13.5 mi (21.7 km) northwest of Carson at mile 19.1 (30.7 km).	79.0	1973	2-14-77 5-10-77 5-31-77 8-15-77	54.0 242 264 11.5
Do.....	Do.....	Lat 45°52'56", long 121°58'00", in NE¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at Siouxon Road crossing (N 73), 1.5 mi (2.4 km) east of Government Mineral Springs, 5.7 mi (9.2 km) northwest of Stabler and at river mile 19.6 (31.5 km).	---	---	2- 7-77 6-14-77 9-14-77	33.5 118 21.5
Trapper Creek	Wind River	Lat 45°52'47", long 121°58'50", in SE¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) upstream from N 511 road bridge, and 5.9 mi (9.5 km) northwest of Stabler.	11.6	---	2- 7-77 6-14-77 9-14-77	10.1 24.5 8.27

† Operated as continuous-record station.
a Operated as crest-stage gage.
b Approximately.
e Estimated.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Wind River basin--Continued				
Wind River	Columbia River	Lat 45°51'36", long 121°57'46", in NW¼SW¼ sec.4, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 1.0 mi (1.6 km) downstream from fish hatchery and 11.8 mi (19.0 km) northwest of Carson at mile 17.0 (27.4 km).	95.3	1973	2-15-77 5-10-77 6- 1-77 8-16-77	105 312 326 43.6
Hollis Creek	Wind River	Lat 45°50'29", long 121°56'20", in SW¼SW¼ sec.10, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at State Route 8C, 9.9 mi (15.9 km) northwest of Carson.	---	1973	2-14-77 5-10-77 6- 1-77 8-16-77	.01 1.2 1.21 0
14127000 Wind River	Columbia River	Lat 45°48'31", long 121°54'27", in NW¼NE¼ sec.26, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30.5 m) downstream from county road bridge, 0.7 mi (1.1 km) upstream from Trout Creek, 7.1 mi (11.4 km) northwest of Carson, and at mile 11.5 (18.5 km).	108	1945-69‡	2- 7-77 9-14-77	106 92.8
14127200 Layout Creek	Trout Creek	Lat 45°49'01", long 122°02'50", near center of E½ sec.22, T.4 N., R.6 E., Skamania County, 1.5 mi (2.4 km) upstream from mouth and 12 mi (19.3 km) northwest of Carson.	1.80	1966-72a, 1973	2-15-77 5-10-77 6- 1-77 8-16-77	9.03 12.6 17.6 .38
Trout Creek	Wind River	Lat 45°48'00", long 121°54'51", in NE¼SW¼ sec.26, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at county road, 0.2 mi (0.3 km) upstream from Martha Creek, 7.0 mi (11.3 km) northwest of Carson.	30.3	1944-48‡, 1973	2- 8-77 2-16-77 6- 1-77 6-14-77 8-16-77 9-14-77	39.8 68.8 156 81.1 7.39 23.2
14128000 Panther Creek	Do.....	Lat 45°48'02", long 121°51'59", in SW¼SE¼ sec.25, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 2,000 ft (61.0 m) upstream from Cedar Creek, 5.9 mi (9.5 km) northwest of Carson.	30.1	1944-54‡, 1973	2- 8-77 2-16-77 5-10-77 6- 1-77 6-14-77 8-16-77 9-14-77	54.4 58.2 120 97.6 81.7 44.9 47.3
Panther Creek	Do.....	Lat 45°46'17", long 121°50'51", in NE¼SW¼ sec.6, T.3 N., R.8 E., Skamania County, Gifford Pinchot National Forest, at county road crossing, 1.3 mi (2.1 km) upstream from mouth and 3.7 mi (6.0 km) northwest of Carson.	---	---	2- 8-77 6-14-77 9-14-77	54.7 89.9 51.3
Bear Creek	Do.....	Lat 45°45'58", long 121°49'20", in NW¼NE¼ sec.8, T.3 N., R.8 E., Skamania County, Gifford Pinchot National Forest, 0.5 mi (0.8 km) upstream from mouth and 3.0 mi (4.8 km) northwest of Carson.	---	---	2- 8-77 6-14-77 9-14-77	4.23 15.4 3.07
Little Wind River	Do.....	Lat 45°43'39", long 121°47'33", in SW¼SW¼ sec.22, T.3 N., R.8 E., Skamania County, 100 ft (30 m) upstream from mouth, 1.3 mi (2.1 km) east of Carson.	9.30	1930, 1935, 1937-45, 1973	2-16-77 5-10-77 6- 1-77 8-16-77	6.52 11.7 12.4 2.07
		Minor basins Between Wind and Washougal Rivers				
Rock Creek	Columbia River	Lat 45°41'44", long 121°53'30", in SE¼SW¼ sec.36, T.3 N., R.7 E., Skamania County, at mouth at Stevenson.	41.0	---	2- 8-77 6-14-77 9-14-77	41.3 87.7 31.3
Hamilton Creek	Do.....	Lat 45°39'13", long 121°59'16", in SW¼SE¼ sec.18, T.2 N., R.7 E., Skamania County, at road crossing, 2.3 mi (3.7 km) west of North Bonneville.	11.8	1952	2- 9-77 6-14-77 9-14-77	17.2 36.1 16.5
Greenleaf Creek	Hamilton Creek	Lat 45°39'20", long 121°57'23", in N½ sec.39, T.2 N., R.7 E., Skamania County, 200 ft (61.0 m) downstream from bridge, 0.3 mi (0.5 m) upstream from mouth and 1.2 mi (1.9 km) northwest of North Bonneville.	5.87	1952-53	2- 8-77 6-14-77 9-13-77	5.98 14.3 5.46
Woodward Creek	Columbia River	Lat 45°37'18", long 122°01'45", in NW¼NE¼ sec.35, T.2 N., R.6 E., Skamania County, at State Highway 14 crossing, 1.1 mi (1.8 km) northeast of town of Skamania.	8.08	1952-53	2- 7-77 6-13-77 9-13-77	13.2 29.8 9.84
Duncan Creek	Do.....	Lat 45°36'50", long 122°03'14", in NE¼SW¼ sec.34, T.2 N., R.6 E., Skamania County, at State Highway 14 crossing and at Skamania.	4.28	1952	2- 7-77 6-13-77 9-13-77	5.52 12.5 2.03
Lawton Creek	Do.....	Lat 45°33'44", long 122°15'55", in NW¼NW¼ sec.24, T.1 N., R.4 E., Clark County, at State Highway 14 crossing and 8.2 mi (13.2 km) east of Central School, Camas.	4.89	1952-53	2- 7-77 6-13-77 9-13-77	2.14 4.92 1.54
Gibbons Creek	Do.....	Lat 45°34'48", long 122°18'33", in NE¼ sec.49, T.1 N., R.4 E., Clark County, at road crossing 0.4 mi (0.6 km) upstream from confluence with Campen Creek, 1 mi (1.6 km) upstream from mouth and 4.6 mi (7.4 km) east of Central School in Camas.	5.20	1951	2- 7-77 6-13-77 9-13-77	2.62 6.98 2.14
Campen Creek	Gibbons Creek	Lat 45°34'40", long 122°18'50", in N½ sec.49, T.1 N., R.4 E., Clark County, at road crossing 200 ft (61 m) upstream from mouth and 4.4 mi (7.1 km) east of Central School, Camas.	2.00	1951	2- 7-77 6-13-77 9-13-77	.53 1.02 .34

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Washougal River basin				
Washougal River	Columbia River	Lat 45°41'36", long 122°07'25", in NW¼NW¼ sec.6, T.2 N., R.6 E., Skamania County, 800 ft (244 m) upstream from Stebbins Creek, 13.5 mi (21.7 km) northeast of Washougal.	30.3	1973	2- 9-77 6-15-77 9-15-77	44.7 70.0 33.8
Stebbins Creek	Washougal River	Lat 45°41'29", long 122°07'16", in NW¼NW¼ sec.6, T.2 N., R.6 E., Skamania County, 200 ft (61 m) upstream from road crossing, 300 ft (91 m) upstream from mouth and 13.5 mi (21.7 km) northeast of Washougal.	8.31	1973	2- 9-77 6-15-77 9-15-77	12.3 17.3 12.8
Dougan Creek	Do.....	Lat 45°40'28", long 122°09'16", in SW¼NE¼ sec.11, T.2 N., R.5 E., Skamania County, 500 ft (152 m) upstream from mouth and 11.5 mi (18.5 km) northeast of Washougal.	5.54	1953, 1961	2- 9-77 6-15-77 9-15-77	8.58 11.1 8.87
Washougal River	Columbia River	Lat 45°36'58", long 122°12'00", in SE¼NW¼ sec.31, T.2 N., R.5 E., Skamania County, at county road crossing, 0.9 mi (1.4 km) upstream from mouth of West Fork Washougal River and 4.0 mi (6.4 km) northwest of Prindle.	---	---	2- 9-77 9-15-77	103 85.1
West Fork Washougal River	Washougal River	Lat 45°41'03", long 122°14'28", in NE¼SW¼ sec.6, T.2 N., R.5 E., Skamania County, 50 ft (15.2 m) upstream from confluence of Hagen Creek and 8.0 mi (12.9 km) northwest of Prindle.	8.16	---	6-15-77 9-15-77	28.8 15.9
Hagen Creek	West Fork Washougal River	Lat 45°41'03", long 122°14'30", in NE¼SW¼ sec.6, T.2 N., R.5 E., Skamania County, 80 ft (24.4 m) upstream from mouth and 8.0 mi (12.9 km) northwest of Prindle.	5.59	---	6-15-77 9-15-77	26.2 13.6
Wildboy Creek	Do.....	Lat 45°38'58", long 122°12'50", in NW¼NE¼ sec.20, T.2 N., R.5 E., Skamania County, 100 ft (30 m) upstream from mouth, 5.2 mi (8.4 km) northwest of Prindle.	7.80	1953	2-10-77 6-15-77 9-14-77	17.0 24.2 10.4
14143000 West Fork Washougal River	Washougal River	Lat 45°36'58", long 122°13'06", in SE¼NW¼ sec.32, T.2 N., R.5 E., Skamania County, 200 ft (61 m) downstream from county road bridge, 1,000 ft (305 m) upstream from mouth, 7 mi (11.3 km) northeast of Washougal.	29.4	1951‡, 1952-54, 1961	2- 7-77 4-13-77 6-14-77 9-14-77	56.6 242 105 38.9
Canyon Creek	Do.....	Lat 45°36'17", long 122°13'38", in NE¼NE¼ sec.6, T.1 N., R.5 E., Skamania County, 200 ft (61 m) upstream from State Highway 140 crossing, 3.6 mi (5.8 km) northeast of Prindle.	4.83	1951	2- 7-77 4-13-77 6-14-77 9-14-77	4.67 17.2 10.3 2.17
Cougar Creek	Do.....	Lat 45°37'33", long 122°18'20", in NW¼SW¼ sec.27, T.2 N., R.4 E., Clark County, at State Highway 140 crossing, 3.5 mi (5.6 km) northeast of Washougal.	5.16	1951, 1961	4-13-77 6-14-77 9-14-77	14.5 13.2 2.02
Boulder Creek	Little Washougal River	Lat 45°40'40", long 122°19'29", in NE¼NW¼ sec.9, T.2 N., R.4 E., Clark County, at Fessenden Lessard Road crossing, and 6.9 mi (11.1 km) northeast of Washougal.	---	---	4-14-77 6-14-77 9-15-77	22.6 14.6 4.54
Little Washougal River	Washougal River	Lat 45°39'06", long 122°20'50", in SW¼SW¼ sec.17, T.2 N., R.4 E., Clark County, at old logging road crossing, 4.9 mi (7.9 km) north of Washougal.	15.8	1951, 1961	4-14-77 6-14-77 9-15-77	55.6 41.6 11.2
14144000 Little Washougal River	Do.....	Lat 45°36'51", long 122°21'26", in NW¼SE¼ sec.31, T.2 N., R.4 E., Clark County, 1.1 mi (1.8 km) upstream from mouth, and 1.8 mi (2.9 km) north of Washougal.	23.8	1951-56‡, 1956-68a	4-14-77 6-14-77 9-14-77	73.6 47.2 15.2
Matney Creek	Lacamas Creek	Lat 45°40'18", long 122°26'19", in NW¼SE¼ sec.9, T.2 N., R.3 E., Clark County, 40 ft (12.2 m) upstream from county road crossing 0.2 mi (0.3 km) upstream from mouth and 6.0 mi (9.7 km) northwest of Camas.	6.44	1951	4-14-77 6-15-77 9-15-77	12.0 5.79 .94
14144500 Lacamas Creek	Washougal River	Lat 45°40'19", long 121°29'13", in SW¼ sec.7, T.2 N., R.3 E., Clark County, 50 ft (15 m) above State Highway 500 bridge at Proebstel.	22.1	1942, 1943, 1951‡, 1961, 1967	4-14-77 6-15-77 9-15-77	42.5 27.1 5.46
Fifth Plain Creek	Lacamas Creek	Lat 45°42'38", long 122°28'08", in SE¼SW¼ sec.29, T.3 N., R.3 E., Clark County, at road crossing 2.9 mi (4.7 km) northeast of Proebstel.	2.27	1951	6-15-77 9-15-77	1.34 .42
14144560 Fifth Plain Creek	Do.....	Lat 45°40'21", long 122°29'35", in W½ sec.7, T.2 N., R.3 E., Clark County, at State Highway 500 crossing, 0.3 mi (0.5 km) upstream from mouth, 0.5 mi (0.8 km) northwest of Proebstel.	18.9	1942, 1943, 1951, 1961	4-14-77 6-15-77 9-15-77	18.1 10.7 3.16
14144580 Lacamas Creek	Washougal River	Lat 45°38'20", long 122°27'21", in SW¼SE¼ sec.51, T.2 N., R.3 E., Clark County, 150 ft (45.7 m) upstream from county road bridge, 4.2 mi (6.8 km) northwest of Camas High School and at mile 5.5 (8.8 km).	51.4	1941-43, 1951, 1961, 1974	4-14-77 6-15-77 9-15-77	73.8 42.5 10.9
Lacamas Creek	Do.....	Lat 45°35'26", long 122°23'21", in NE¼ sec.47, T.1 N., R.3 E., Clark County, 150 ft (45.7 m) upstream from State Highway 14 crossing in Camas, downstream from Crown Zellerbach diversion, and 0.2 mi (0.3 km) upstream from mouth.	66.2	---	4-14-77	4.21

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Lake River basin				
14211900 Burntbridge Creek	Lake River	Lat 45°39'07", long 122°39'18", in SE¼SW¼ sec.14, T.2 N., R.1 E., Clark County, at "P" Street, 0.3 mi (0.5 km) east of Interstate 5 at north city limits of Vancouver.	21.6	1949-71a	6-15-77 9-16-77	1.81 1.36
14212000 Salmon Creek	Do.....	Lat 45°46'26", long 122°26'40", in NE¼SW¼ sec.4, T.3 N., R.3 E., Clark County, 100 ft (30 m) upstream from highway bridge, 150 ft (46 m) downstream from Rock Creek, 4.3 mi (6.9 m) east of Battle Ground, and at mile 22.1 (35.6 km).	18.3	1944-75‡, 1976-77a, 1976	6-13-77 9-16-77	30.5 4.09
Salmon Creek	Do.....	Lat 45°44'35", long 122°32'44", in NW¼SE¼ sec.15, T.3 N., R.2 E., Clark County, 20 ft (6.1 m) upstream from N.E. Caples Road crossing, 5.3 mi (8.5 km) north of Orchards and at mile 14.6 (23.5 km).	35.7	1941-43	6-13-77 9-16-77	41.4 7.75
Weaver Creek	Salmon Creek	Lat 45°44'32", long 122°32'43", in NW¼SE¼ sec.15, T.3 N., R.2 E., Clark County, at State Highway 503 crossing, 0.1 mi (0.2 km) upstream from mouth, and 5.3 mi (8.5 km) north of Orchards.	6.47	1941-43, 1947, 1951, 1973	6-13-77 9-16-77	6.29 1.13
Unnamed tributary	Do.....	Lat 45°43'22", long 122°35'23", in NE¼NW¼ sec.29, T.3 N., R.2 E., Clark County, at N.E. 139th St. crossing and 2.9 mi (4.7 km) northeast of town of Salmon Creek.	12.9	1941-43, 1947, 1951	6-13-77 9-16-77	3.79 2.64
Mill Creek	Do.....	Lat 45°43'51", long 122°37'39", in SW¼NE¼ sec.24, T.3 N., R.1 E., Clark County, at Salmon Creek Road crossing near mouth.	16.0	1941-43, 1947, 1951, 1961, 1967	6-13-77 9-16-77	2.36 .48
Salmon Creek	Lake River	Lat 45°42'48", long 122°41'05", in NW¼SE¼ sec.28, T.3 N., R.1 E., Clark County, just below Cougar Canyon Creek, 1.1 mi (1.8 km) northeast of Felida.	87.7	---	9-16-77	23.2
Whipple Creek	Do.....	Lat 45°44'58", long 122°42'41", in NE¼NW¼ sec.17, T.3 N., R.1 E., Clark County, at State Highway crossing, 4.8 mi (7.7 km) southeast of Ridgefield.	8.85	1947, 1951, 1961	6-15-77 9-16-77	2.57 1.54
		Minor basin between Lake and Lewis Rivers				
Gee Creek	Columbia River	Lat 45°47'37", long 122°41'00", in NE¼NE¼ sec.33, T.4 N., R.1 E., Clark County, at road crossing, 3.3 mi (5.3 km) southeast of Ridgefield.	5.29	1947	6-13-77 9-16-77	0.56 .46
		Lewis River basin				
14213500 Big Creek	Lewis River	Lat 46°05'36", long 121°51'50", Skamania County, Gifford Pinchot National Forest, 40 ft (12 m) upstream from forest service road, just downstream from Skookum Meadow, 3 mi (4.8 km) upstream from mouth and 17 mi (27.4 km) northwest of Trout Lake.	13.2	1928-31‡, 1956-70‡, 1971-77a	6- 8-77	72.5
		Kalama River basin				
14222970 Spring Creek	Kalama River	Lat 46°06'37", long 122°21'23", in NW¼NE¼ sec.7, T.7 N., R.4 E., Cowlitz County, 100 ft (30 m) upstream from mouth, 400 ft (122 m) southeast of Kalama Falls, and 4.7 mi (7.6 km) northwest of Cougar.	---	1970-71‡, 1972-77a	5- 5-77	66.2
North Fork Kalama River	Do.....	Lat 46°05'47", long 122°23'58", in NW¼NE¼ sec.14, T.7 N., R.3 E., Cowlitz County, at bridge 50 ft (15 m) upstream from mouth and 5.6 mi (9.0 km) northwest of Cougar.	12.8	---	2- 8-77 6-15-77 9-14-77	20.0 25.4 18.8
Elk Creek	Do.....	Lat 46°04'28", long 122°30'38", in NW¼SW¼ sec.24, T.7 N., R.2 E., Cowlitz County, at road crossing, 200 ft (61 m) upstream from mouth and 5.9 mi (9.5 km) east of Pigeon Springs.	11.3	1926, 1951	2- 8-77 6-15-77 9-14-77	13.9 32.9 13.0
Gobar Creek	Do.....	Lat 46°03'07", long 122°37'22", in SW¼SE¼ sec.25, T.7 N., R.1 E., Cowlitz County, 300 ft (91 m) upstream from road crossing at Pigeon Springs.	21.2	1951-52, 1961, 1973	2- 9-77 6-15-77 9-14-77	27.1 47.9 15.4
Wild Horse Creek	Do.....	Lat 46°02'54", long 122°37'58", in SW¼NW¼ sec.36, T.7 N., R.1 E., Cowlitz County, 100 ft (30 m) upstream from road crossing near mouth and 0.5 mi (0.8 km) southwest of Pigeon Springs.	8.23	1951, 1961	2- 7-77 6-15-77 9-14-77	6.52 18.4 7.02
Little Kalama River	Do.....	Lat 45°59'18", long 122°40'16", in NE¼SW¼ sec.22, T.6 N., R.1 E., Cowlitz County, 30 ft (9.1 m) downstream from private road crossing, 200 ft (61.0 m) downstream from mouth of Dee Creek and 6.6 mi (10.6 km) northeast of Woodland.	---	---	2- 9-77 6-15-77 9-15-77	3.48 9.50 2.58

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Kalama River basin--Continued				
Italian Creek	Kalama River	Lat 46°02'01", long 122°43'42", in SW¼SE¼ sec.6, T.6 N., R.1 E., Cowlitz County, at Bratschi Doane Road crossing 0.6 mi (1.0 km) upstream from mouth and 5.3 mi (8.5 km) southwest of Pigeon Springs.	---	---	2- 7-77 6-15-77 9-14-77	1.46 3.37 .92
Hatchery Creek	Do.....	Lat 46°02'43", long 122°48'11", in SW¼SW¼ sec.34, T.7 N., R.1 W., Cowlitz County, at Kalama River Road bridge near mouth near Salmon hatchery and 3.2 mi (5.1 km) northeast of Kalama.	5.96	1951	2- 7-77 6-15-77 9-14-77	17.0 16.9 14.0
Kalama River	Columbia River	Lat 46°02'42", long 122°48'51", in SE¼SW¼ sec.33, T.7 N., R.1 W., Cowlitz County, 5.7 mi (9.2 km) downstream from Italian Creek, 2.8 mi (4.5 km) northeast of Kalama, and at mile 4.2 (6.8 km).	198	1947-75‡, 1976, 1976-77a	2- 7-77 6-14-77 9-15-77	289 618 269
		Minor basins Between Kalama and Cowlitz Rivers				
Owl Creek	Columbia River	Lat 46°05'30", long 122°52'05", in SE¼SE¼ sec.13, T.7 N., R.2 W., Cowlitz County, at old U.S. Highway 99 crossing and 1.4 mi (2.3 km) north of Carrolls.	7.81	1951	2- 8-77 6-14-77 9-15-77	1.36 2.62 .31
		Cowlitz River basin				
14233500 West Fork Tilton River	Tilton River	Lat 46°36'40", long 122°14'36", in NE¼SE¼ sec.13, T.13 N., R.4 E., Lewis County, 0.9 mi (1.4 km) upstream from mouth and 3.8 mi (6.1 km) northeast of Morton.	16.4	1951-71‡, 1972-77a	5- 4-77	160
14237500 Winston Creek	Cowlitz River	Lat 46°28'37", long 122°31'13", about center of sec.33, T.12 N., R.2 E., Lewis County, 100 ft (30 m) downstream from bridge, 3.2 mi (5.1 km) upstream from mouth, and 4.4 mi (7.1 km) southeast of town of Silver Creek.	37.8	1950-70‡, 1971-77a	5- 4-77	106
14239000 Salmon Creek	Do.....	Lat 46°24'50", long 122°49'15", in NW¼NW¼ sec.28, T.11 N., R.1 W., Lewis County, 0.2 mi (0.3 km) downstream from Little Salmon Creek, 2.2 mi (3.5 km) southeast of Toledo, and at mile 3.3 (5.3 km).	77.6	1962-71‡, 1972-77a	5- 4-77	144
		Minor basins Between Cowlitz River and Abernathy Creek				
Clark Creek	Columbia River	Lat 46°10'46", long 122°59'31", in SE¼SE¼ sec.13, T.8 N., R.3 W., Cowlitz County, at Pacific Highway crossing 3.8 mi (6.1 km) northwest of city center of Longview.	4.58	1949	2- 8-77 6-14-77 9-15-77	2.15 2.41 .78
Coal Creek	Do.....	Lat 46°11'16", long 123°02'00", in SE¼SE¼ sec.10, T.8 N., R.3 W., Cowlitz County, 200 ft (61 m) upstream from county road crossing, just upstream from Harmony Creek and 4.2 mi (6.8 km) east of Stella.	20.0	1949-50, 1967	2- 8-77 6-14-77 9-15-77	18.0 25.8 9.25
Harmony Creek (formerly published as Mosquito Creek)	Coal Creek	Lat 46°11'16", long 123°02'06", in SE¼SE¼ sec.10, T.8 N., R.3 W., Cowlitz County, 30 ft (9.1 m) upstream from mouth and 4.2 mi (6.8 km) east of Stella.	6.12	1949	2- 8-77 6-14-77 9-15-77	4.10 5.46 1.75
Falls Creek	Columbia River	Lat 46°11'57", long 123°06'51", in NE¼NE¼ sec.12, T.8 N., R.4 W., Cowlitz County, at old Stella Road crossing, 0.6 mi (1.0 km) north of Stella.	---	---	2- 8-77 6-14-77 9-15-77	.76 1.00 .18
14245500 Germany Creek	Do.....	Lat 46°11'46", long 123°07'34", in NW¼NW¼ sec.12, T.8 N., R.4 W., Cowlitz County, 0.5 mi (0.8 km) upstream from mouth and 10 mi (16.1 km) northwest of Longview.	22.2	1949-50‡, 1950-54	2- 8-77 6-14-77 9-15-77	26.3 37.6 15.2
		Abernathy Creek basin				
Abernathy Creek	Columbia River	Lat 46°15'38", long 123°10'32", in SE¼SE¼ sec.16, T.9 N., R.4 W., Cowlitz County, at road crossing 0.3 mi (0.5 km) upstream from Erick Creek and 15 mi (24 km) northwest of Longview.	9.59	1949	2- 9-77 6-14-77 9-15-77	14.1 21.3 14.3
Slide Creek	Abernathy Creek	Lat 46°12'34", long 123°09'09", in SE¼SE¼ sec.3, T.8 N., R.4 W., Cowlitz County, 200 ft (61 m) upstream from mouth and 11.5 mi (18.5 km) northwest of Longview.	2.47	1949	2- 9-77 6-14-77 9-15-77	1.65 2.08 1.08
14246000 Abernathy Creek	Columbia River	Lat 46°12'10", long 123°09'15", in NE¼SE¼ sec.3, T.8 N., R.4 W., Cowlitz County, 10.5 mi (16.9 km) northwest of R.A. Long High School and at mile 1.3 (2.1 km).	20.3	1949-59‡, 1973	2- 8-77 6-14-77 9-15-77	25.4 32.3 20.3
		Elochoman River basin				
West Fork Elochoman River	Elochoman River	Lat 46°19'18", long 123°15'40", in SW¼SE¼ sec.26, T.10 N., R.5 W., Wahkiakum county, 700 ft (213 m) upstream from private logging bridge, 800 ft (244 m) upstream from mouth and 9.8 mi (15.8 km) northeast of Skamokawa.	10.1	---	2- 1-77 6-13-77 9-13-77	21.3 38.1 19.2

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1977

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Elochoman River basin--Continued						
Elochoman River	Columbia River	Lat 46°19'15", long 123°15'30", in SE¼NE¼ sec.26, T.10 N., R.5 W., Wahkiakum County, 800 ft (244 m) downstream from West Fork and 9.8 mi (15.8 km) northeast of Skamokawa.	35.4	1949	2- 7-77 6-13-77 9-13-77	68.0 97.6 41.3
Beaver Creek	Elochoman River	Lat 46°13'35", long 123°19'10", in NE¼NE¼ sec.32, T.9 N., R.5 W., Wahkiakum County, at private road crossing 0.5 mi (0.8 km) upstream from mouth and 3.4 mi (5.5 km) northeast of Cathlamet.	7.21	1949	2- 7-77 6-13-77 9-13-77	4.98 7.54 5.17
14247500 Elochoman River	Columbia River	Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, 125 ft (38.1 m) upstream from railroad bridge, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).	65.8	1941-71‡, 1972-77a, 1973, 1976	10-21-76 2- 7-77 4-13-77 6-13-77 9-13-77	30.0 98.0 204 149 73.8
Nelson Creek	Elochoman River	Lat 46°14'25", long 123°22'36", in SW¼SW¼ sec.25, T.9 N., R.6 W., Wahkiakum County, at old highway 12 crossing, 2.5 mi (4.0 km) north of Cathlamet.	4.03	1949	2- 8-77 6-14-77	3.44 4.93
Skamokawa Creek basin						
Skamokawa Creek	Columbia River	Lat 46°19'11", long 123°27'16", in N½SW¼ sec.29, T.10 N., R.6 W., Wahkiakum County, 200 ft (61.0 m) below confluence of Left Fork and 3.4 mi (5.5 km) north of Skamokawa.	15.8	——	2- 8-77 6-14-77 9-15-77	27.5 40.1 10.1
14248000 Skamokawa Creek	Do.....	Lat 46°17'57", long 123°26'34", in NE¼NE¼ sec.5, T.9 N., R.6 W., Wahkiakum County, 25 ft (7.6 m) downstream from county road bridge and 2.0 mi (3.2 km) north of Skamokawa.	17.4	1949-50‡, 1951, 1954	2- 7-77 6-14-77 9-14-77	37.1 45.9 31.0
Falk Creek	Skamokawa Creek	Lat 46°17'58", long 123°26'20", near north line NW¼ sec.4, T.9 N., R.6 W., Wahkiakum County, at county road crossing 2.1 mi (3.4 km) northeast of Skamokawa.	3.49	1949	2- 8-77 6-14-77 9-14-77	4.92 6.91 4.76
Wilson Creek	Do.....	Lat 46°17'20", long 123°26'15", in SW¼SW¼ sec.4, T.9 N., R.6 W., Wahkiakum County, 100 ft (30 m) upstream from East Valley road crossing and 1.5 mi (2.4 km) northeast of Skamokawa.	13.8	1928, 1929, 1949-50	2- 8-77 6-14-77 9-14-77	23.2 33.4 21.9
Minor basin Between Skamokawa Creek and Grays River						
Crooked Creek	Columbia River	Lat 46°17'56", long 123°38'52", in NE¼NE¼ sec.3, T.9 N., R.8 W., Wahkiakum County, at county road crossing, 2.0 mi (3.2 km) upstream from mouth and 2.6 mi (4.2 km) south of Rosburg.	10.2	1949, 1967	2- 9-77 6-15-77 9-14-77	17.0 18.5 13.6
Grays River basin						
14249000 Grays River	Columbia River	Lat 46°23'36", long 123°28'39", in NW¼ sec.31, T.11 N., R.6 W., Pacific County, 500 ft (152 m) upstream from South Fork, 6.8 mi (10.9 km) northeast of town of Grays River, and at mile 17.8 (28.6 km).	39.9	1956-75‡, 1976-77a	2- 8-77 6-14-77 9-15-77	79.3 112 73.9
Fossil Creek	Grays River	Lat 46°21'44", long 123°33'10", in NE¼SW¼ sec.9, T.10 N., R.7 W., Wahkiakum County, 75 ft (22.9 m) upstream from logging road bridge 0.1 mi (0.2 km) upstream from mouth and 2.7 mi (4.3 km) east of town of Grays River.	5.50	1928, 1949	2- 8-77 6-14-77 9-14-77	11.0 12.4 9.26
Klints Creek	Do.....	Lat 46°21'22", long 123°33'30", in NW¼NW¼ sec.16, T.10 N., R.7 W., Wahkiakum, 50 ft (15 m) below private logging road crossing and 2.5 mi (4.0 km) east of town of Grays River.	3.57	1949	6-15-77 9-14-77	5.99 4.65
14250900 Grays River	Columbia River	Lat 46°21'34", long 123°33'55", in SE¼SE¼ sec.8, T.10 N., R.7 W., Wahkiakum County, 2.2 mi (3.5 km) east of town of Grays River, on State Highway 4 and at mile 11.6 (18.7 km).	92.5	1928, 1929, 1973, 1976	10-21-76 2- 8-77 4-13-77 6-15-77 8-12-77	17.6 105 331 231 39.6
Fall Creek	Hull Creek	Lat 46°22'25", long 123°35'20", in SW¼SE¼ sec.6, T.10 N., R.7 W., Wahkiakum County, 30 ft (9.1 m) upstream from county road crossing, near mouth and 1.6 mi (2.6 km) northeast of town of Grays River.	3.02	1953	2- 9-77 6-15-77	4.88 5.88
Malone Creek	Seal Slough	Lat 46°20'08", long 123°38'32", in SW¼NW¼ sec.23, T.10 N., R.8 W., Wahkiakum County, just upstream from U.S. Highway 830 crossing at Rosburg.	2.72	1949	2- 9-77 6-15-77 9-14-77	5.34 5.93 3.94
Deep River basin						
Deep River	Columbia River	Lat 46°21'39", long 123°40'50", in NW¼SW¼ sec.9, T.10 N., R.8 W., Wahkiakum County, upstream side of bridge, just upstream from confluence of Henderson Creek and 2.6 mi (4.2 km) northwest of Rosburg.	1.76	——	2- 9-77 6-15-77 9-14-77	3.72 3.14 2.09

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES IN QUILLAYUTE RIVER BASIN

Samples are collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin. Such sites are referred to as miscellaneous sites.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
12042400 SOLEDUCK RIVER AT HIGHWAY 101 AT FORKS, WA (LAT 47°59'01" LONG 124°23'48) RIVER MILE 19.0													
AUG., 1976													
26...	0925 (a)	81	11.0	0	0	10.6	225	--	.02	.00	.02	.00	.00
OCT., 1977													
04...	1350 (b)	64	9.1	0	0	12.5	300	5	.10	.08	.04	.00	.00
NOTE.--Mean daily discharge: (a) 450 ft³/s; (b) 280 ft³/s.													
475902124251501 SOLEDUCK RIVER, WA (LAT 47°59'02" LONG 124°25'15") RIVER MILE 17.4													
AUG., 1976													
26...	1010	82	12.0	0	0	10.6	96	--	.02	.00	.02	.01	.00
OCT., 1977													
04...	1430	85	9.0	0	0	12.5	B8200	6	.11	.00	.03	.00	.00
475906124252001 GUNDERSON CREEK AT MOUTH (LAT 47°59'06" LONG 124°25'20") AT SOLEDUCK RIVER MILE 17.3													
AUG., 1976													
26...	1020	62	11.2	25	2	10.6	217	--	.36	.00	.04	.02	.01
OCT., 1977													
04...	1435	73	8.7	5	0	11.2	130	15	.59	.00	.28	.00	.00
475832124260901 SOLEDUCK RIVER, WA (LAT 47°58'32" LONG 124°26'09") RIVER MILE 16.1													
AUG., 1976													
26...	1040	82	12.3	0	0	10.8	56	--	.02	.00	.02	.00	.00
OCT., 1977													
04...	1505	63	9.0	0	0	12.6	B300	5	.12	.00	.08	.00	.00
475752124265001 SOLEDUCK RIVER, WA (LAT 47°57'52" LONG 124°26'50") RIVER MILE 15.2													
AUG., 1976													
26...	1100	83	12.2	0	0	10.8	116	--	.03	.00	.05	.01	.00
OCT., 1977													
04...	1530	63	9.0	0	0	12.6	320	6	.08	.00	.04	.00	.00
12042500 SOLEDUCK RIVER NEAR QUILLAYUTE, WA (LAT 47°57'03" LONG 124°28'00") RIVER MILE 13.9													
AUG., 1976													
26...	1120 (a)	83	12.6	0	0	11.0	110	--	.03	.00	.04	.01	.01
OCT., 1977													
04...	1550 (b)	83	9.1	0	0	12.7	B200	6	.06	.00	.04	.00	.00
NOTE.--Mean daily discharge: (a) 450 ft³/s; (b) 280 ft³/s.													
475640124283901 SOLEDUCK RIVER, WA (LAT 47°56'40" LONG 124°28'39") RIVER MILE 12.6													
AUG., 1976													
26...	1155	83	12.6	0	0	10.9	76	--	.02	.00	.05	.01	.00
OCT., 1977													
04...	1620	81	8.9	0	0	12.7	B180	82	.08	.00	.04	.00	.00
475623124293301 SOLEDUCK RIVER, WA (LAT 47°56'23" LONG 124°29'33") RIVER MILE 11.0													
AUG., 1976													
26...	1230	83	13.0	0	0	--	88	--	.02	.00	.04	.01	.00
OCT., 1977													
04...	1655	64	9.2	0	0	12.6	150	4	.08	.02	.07	.00	.00
475540124300501 SOLEDUCK RIVER, WA (LAT 47°55'40" LONG 124°30'05") RIVER MILE 9.4													
AUG., 1976													
26...	1305	82	13.4	0	0	10.9	30	--	.02	.00	.03	.01	.00
OCT., 1977													
04...	1730	83	9.2	0	0	12.1	B170	6	.07	.00	.04	.00	.00
475558124311201 SOLEDUCK RIVER, WA (LAT 47°55'58" LONG 124°31'12") RIVER MILE 8.1													
AUG., 1976													
26...	1345	83	--	0	0	10.6	45	--	.01	.01	.05	.01	.00
OCT., 1977													
04...	1755	62	9.1	0	0	12.2	160	3	.07	.00	.04	.00	.00
12042503 SOLEDUCK RIVER AT MOUTH NEAR LA PUSH, WA (LAT 47°54'55", LONG 124°32'27") RIVER MILE 6.3													
OCT., 1977													
04...	1830 (a)	69	9.5	0	2	11.0	2400	87	.05	.00	.04	.00	.00
NOTE.--Mean daily discharge: (a) 280 ft³/s.													

B Results based upon colony counts outside the ideal range.

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES IN QUILLAYUTE RIVER BASIN

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)
475230124173701 BOGACHIEL RIVER, WA (LAT 47°52'30" LONG 124°17'37") RIVER MILE 19.5													
AUG . 1976													
25...	0920	79	11.8	0	0	10.6	16	--	.00	.00	.03	.00	.00
OCT . 1977													
05...	1345	80	9.8	0	0	11.8	B36	5	.01	.00	.11	.00	.00
475229124195101 BOGACHIEL RIVER, WA (LAT 47°52'29 LONG 124°19'51") RIVER MILE 17.4													
AUG . 1976													
25...	0940	80	12.4	0	0	10.7	30	--	.00	.01	.04	.01	.01
OCT . 1977													
05...	1410	80	9.8	5	0	11.8	140	8	.02	.00	.09	.00	.00
12042800 BOGACHIEL RIVER NEAR FORKS, WA (LAT 47°53'40" LONG 124°21'19") RIVER MILE 15.3													
AUG . 1976													
25...	0955 (a)	78	12.5	0	1	10.6	33	--	.00	.00	.03	.01	.00
OCT . 1977													
05...	1435 (b)	80	10.4	0	1	12.1	B22	10	.02	.00	.06	.00	.00
NOTE.--Mean daily discharge: (a) 251 ft³/s; (b) 205 ft³/s.													
475417124232001 BOGACHIEL RIVER, WA (LAT 47°54'17" LONG 124°23'20") RIVER MILE 12.6													
AUG . 1976													
25...	1015	80	12.9	5	0	10.4	26	--	.00	.00	.03	.01	.01
OCT . 1977													
05...	1445	62	11.2	5	1	12.2	B17	5	.04	.01	.10	.00	.00
475529124243901 BOGACHIEL RIVER, WA (LAT 47°55'29" LONG 124°24'39) RIVER MILE 10.1													
AUG . 1976													
25...	1030	78	13.2	5	1	10.3	32	--	.01	.00	.11	.01	.01
OCT . 1977													
05...	1510	78	10.9	5	1	12.2	B140	13	.02	.00	.25	.00	.00
475555124262101 BOGACHIEL RIVER, WA (LAT 47°55'55" LONG 124°26'21") RIVER MILE 8.7													
AUG . 1976													
25...	1045	80	13.6	0	0	10.5	42	--	.00	.00	.05	.00	.00
OCT . 1977													
05...	1535	62	10.6	0	1	12.8	B130	94	.01	.01	.02	.06	--
475553124270001 BOGACHIEL RIVER, WA (LAT 47°55'53" LONG 124°27'00") RIVER MILE 8.0													
AUG . 1976													
25...	1410	80	14.4	0	0	10.7	33	--	.00	.00	.05	.09	.09
OCT . 1977													
05...	1250	74	8.6	0	0	12.6	230	11	.06	.00	.01	.00	.00
475530124282001 BOGACHIEL RIVER, WA (LAT 47°55'30" LONG 124°28'20") RIVER MILE 6.4													
AUG . 1976													
25...	1420	79	14.4	0	0	10.8	42	--	.02	.01	.04	.02	.01
OCT . 1977													
05...	1310	79	8.7	0	0	13.2	B170	8	.03	.01	.01	.00	.00
475456124293901 BOGACHIEL RIVER, WA (LAT 47°54'56" LONG 124°29'39) RIVER MILE 4.9													
AUG . 1976													
25...	1430	78	14.4	0	0	10.7	18	--	.03	.00	.02	.01	.00
OCT . 1977													
05...	1335	79	8.8	0	0	13.1	B22	7	.05	.00	.01	.00	.00
475450124302101 BOGACHIEL RIVER, WA (LAT 47°54'50" LONG 124°30'21") RIVER MILE 3.7													
AUG . 1976													
25...	1445	80	14.9	0	0	10.5	13	--	.03	.00	.04	.01	.01
OCT . 1977													
05...	1405	79	9.2	0	0	12.5	220	5	.03	.00	.01	.00	.00
475414124305201 MAXFIELD CREEK AT MOUTH (LAT 47°54'14" LONG 124°30'52") AT BOGACHIEL RIVER MILE 2.7													
AUG . 1976													
25...	1730	73	14.2	25	4	9.6	74	--	.00	.00	.07	.03	.02
OCT . 1977													
05...	1430	52	8.7	20	1	11.4	280	10	.00	.01	.06	.01	.00
475432124313301 BOGACHIEL RIVER, WA (LAT 47°54'32" LONG 124°31'33") RIVER MILE 2.1													
AUG . 1976													
25...	1455	80	15.2	0	0	10.4	28	--	.03	.00	.02	.01	.00
OCT . 1977													
05...	1445	80	9.4	0	0	12.5	290	8	.03	.00	.02	.00	.00

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
475356124321101 MURPHY CREEK AT MOUTH (LAT 47°53'56" LONG 124°32'11) AT BOGACHIEL RIVER MILE 1.2													
AUG . 1976													
25...	1505	57	13.8	50	3	9.8	74	--	.01	.00	.23	.03	.02
OCT . 1977													
05...	1505	55	7.8	50	50	11.4	8600	20	.01	.00	.05	.02	.00
12043015 BOGACHIEL RIVER NEAR LA PUSH, WA (LAT 47°54'11" LONG 124°32'39") RIVER MILE 0.8													
AUG . 1976													
25...	1510 (a)	78	15.0	0	1	10.4	36	--	.00	.00	.03	.01	.01
OCT . 1977													
05...	1520 (b)	81	9.3	0	0	12.1	2600	5	.03	.00	.02	.01	.00

NOTE.--Mean daily discharge: 250 ft³/s; (b) 205 ft³/s.

475449124322201 BOGACHIEL RIVER AT MOUTH (LAT 47°54'49" LONG 124°32'22") AT SOLEDUCK RIVER MILE 6.5

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	SALINITY (PPT)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
AUG . 1976										
12...	1230	1.6	--	.1	9.8	--	--	--	1.8	116
25...	1520	--	79	--	15.1	0	0	10.2	--	44
OCT . 1977										
05...	1535	--	80	--	9.4	5	1	12.3	--	B64

DATE	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
AUG . 1976										
12...	--	--	--	--	--	--	--	--	--	--
25...	--	31	4	9.8	1.5	3.1	.3	32	26	6.2
OCT . 1977										
05...	14	--	--	--	--	--	--	--	--	--

DATE	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
AUG . 1976										
12...	--	--	--	--	--	--	--	--	--	--
25...	3.1	.1	6.5	46	.06	.00	.00	.03	.01	.00
OCT . 1977										
05...	--	--	--	--	--	.03	.00	.02	.00	.00

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO PHOS- PHORUS (P) (MG/L)
475808124195801 SOUTH FORK CALAWAH RIVER AT MOUTH (LAT 47°58'08" LONG 124°19'58") RIVER MILE 10.4													
AUG . 1976													
24...	1430	68	13.8	0	0	10.5	17	--	.01	.00	.04	.09	.09
OCT . 1977													
06...	1005	60	7.4	0	0	11.7	310	3	.06	.00	.03	.00	.00
475814124195301 NORTH FORK CALAWAH RIVER AT MOUTH (LAT 47°58'14" LONG 124°19'53") AT CALAWAH RIVER MILE 10.2													
AUG . 1976													
24...	1440	64	12.0	0	0	10.7	3	--	.10	.00	.22	.01	.01
OCT . 1977													
05...	1015	60	7.8	0	0	11.5	160	20	.24	.00	.03	.00	.00
475802124212101 CALAWAH RIVER, WA (LAT 47°58'02" LONG 124°21'21") RIVER MILE 9.1													
AUG . 1976													
24...	1520	67	13.6	0	0	10.8	10	--	.03	.00	.04	.01	.00
OCT . 1977													
05...	1040	62	7.6	0	0	12.1	190	4	.09	.00	.03	.00	.00
475759124212401 ELK CREEK AT MOUTH (LAT 47°57'59" LONG 124°21'24") AT CALAWAH RIVER MILE 9.0													
AUG . 1976													
24...	1525	53	11.7	0	0	10.6	50	--	.02	.00	.04	.02	.01
OCT . 1977													
05...	1050	51	8.3	0	0	11.6	B840	5	.08	.00	.03	.01	.00
475808124225301 CALAWAH RIVER, WA (LAT 47°58'08" LONG 124°22'53") RIVER MILE 7.5													
AUG . 1976													
24...	1600	66	13.7	0	0	11.0	5	--	.02	.00	.13	.01	.01
OCT . 1977													
06...	1120	61	7.7	0	0	12.0	240	7	.08	.00	.03	.00	.00
12043000 CALAWAH RIVER NEAR FORKS, WA (LAT 47°57'37" LONG 124°23'30") RIVER MILE 6.6													
AUG . 1976													
24...	1620 (a)	65	13.7	0	0	11.0	8	--	.01	.00	.04	.00	.00
OCT . 1977													
06...	1150 (b)	60	7.9	0	0	12.4	350	84	.08	.00	.04	.00	.00

NOTE.--Mean daily discharge: (a) 170 ft³/s; (b) 185 ft³/s.

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO- GEN (N) (MG/L)	TOTAL PHOS- PHORUS (P) (MG/L)	TOTAL ORTHO PHOS- PHORUS (P) (MG/L)
475708124243601 CALAWAH RIVER, WA (LAT 47°57'08" LONG 124°24'36") RIVER MILE 5.1													
AUG . 1976													
24...	1715	65	13.8	0	0	10.8	16	--	.00	.00	.02	.00	.00
OCT . 1977													
05...	1240	67	7.9	0	0	12.4	370	4	.07	.00	.02	.00	.00
475724124251001 CALAWAH RIVER, WA (LAT 47°57'24" LONG 124°25'10") RIVER MILE 3.8													
AUG . 1976													
24...	1810	67	14.1	0	0	10.8	27	--	.02	.00	.06	.01	.01
OCT . 1977													
06...	1325	62	8.0	0	0	12.4	B160	3	.06	.00	.02	.00	.00
475738124261301 CALAWAH RIVER, WA (LAT 47°57'38" LONG 124°26'13") RIVER MILE 2.6													
AUG . 1976													
24...	1850	67	14.1	0	0	10.8	24	--	.02	.00	.15	.00	.00
OCT . 1977													
06...	1355	77	8.1	0	0	12.2	270	10	.05	.01	.04	.00	.00
475650124255501 CALAWAH RIVER, WA (LAT 47°56'50" LONG 124°25'55") RIVER MILE 1.6													
AUG . 1976													
24...	1930	68	14.3	0	0	10.4	8	--	.01	.00	.08	.01	.00
OCT . 1977													
06...	1435	67	8.4	0	0	12.3	B600	9	.05	.01	.03	.00	.00

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

12043003 CALAWAH RIVER AT MOUTH NEAR FORKS, WA (LAT 47°56'04" LONG 124°26'49") AT BOGACHIEL RIVER MILE 8.2

DATE	TIME	MEAN DAILY DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./ 100 ML)	HARD-NESS (CA,MG) (MG/L)
AUG , 1976 24...	2000	170	73	14.0	0	0	--	3	--	27
OCT , 1977 06...	1510	185	68	8.6	0	0	12.1	290	11	--

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
AUG , 1976 24...	0	7.9	1.8	3.1	.3	34	28	5.7	2.3
OCT , 1977 06...	--	--	--	--	--	--	--	--	--

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)
AUG , 1976 24...	.1	8.0	46	.06	.03	.00	.02	.00	.00
OCT , 1977 06...	--	--	--	--	.09	.00	.04	.00	.00

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./ 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)
475916124325501 WEST FORK DICKEY RIVER AT MOUTH (LAT 47°59'16" LONG 124°32'55") RIVER MILE 8.1													
AUG , 1976 24...	0910	44	13.7	40	1	9.4	90	--	.02	.00	.10	.02	.01
OCT , 1977 04...	0845	48	8.9	40	1	10.5	240	44	.02	.01	.03	.02	.01
475909124324501 EAST FORK DICKEY RIVER AT MOUTH (LAT 47°59'09" LONG 124°32'45") AT DICKEY RIVER MILE 7.9													
AUG , 1976 24...	0850	74	12.6	25	1	10.0	62	--	.05	.00	.05	.02	.01
OCT , 1977 04...	0825	65	7.3	20	1	11.5	260	25	.12	.00	.04	.02	.00
475910124330901 DICKEY RIVER, WA (LAT 47°59'10" LONG 124°33'09") RIVER MILE 7.7													
AUG , 1976 24...	0920	56	13.5	35	1	9.8	84	--	.03	.00	.05	.02	.01
OCT , 1977 04...	0905	56	8.0	30	1	11.1	B300	B30	.08	.00	.05	.02	.00
475839124332001 DICKEY RIVER, WA (LAT 47°58'39" LONG 124°33'20") RIVER MILE 6.8													
AUG , 1976 24...	0950	59	13.4	35	1	9.8	78	--	.03	.00	.10	.04	.04
OCT , 1977 04...	0930	57	8.8	30	1	10.8	B130	48	.08	.00	.03	.02	.01
12043100 DICKEY RIVER NEAR LA PUSH, WA (LAT 47°57'55" LONG 124°32'50") RIVER MILE 6.0													
AUG , 1976 24...	1005 (a)	57	13.2	35	1	9.8	90	--	.02	.01	.07	.02	.01
OCT , 1977 04...	1005 (b)	58	7.9	30	1	11.2	280	B30	.07	.00	.04	.01	.00

NOTE.--Mean daily discharge: (a) 150 ft³/s; (b) 104 ft³/s.

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
475724124333201 DICKEY RIVER, WA (LAT 47°57'24" LONG 124°33'32") RIVER MILE 5.1													
AUG , 1976													
24...	1025	58	13.0	35	1	9.7	156	--	.03	.00	.06	.02	.01
OCT , 1977													
04...	1030	58	7.9	30	1	11.2	B82	B37	.09	.00	.06	.02	.01
475720124332801 COLBY CREEK AT MOUTH (LAT 47°57'20" LONG 124°33'28") AT DICKEY RIVER MILE 5.0													
AUG , 1976													
24...	1030	83	11.4	40	2	10.0	74	--	.07	.01	.11	.02	.02
OCT , 1977													
04...	1040	90	6.9	30	1	11.3	B200	B22	.14	.00	.04	.01	.00
475706124335401 DICKEY RIVER, WA (LAT 47°57'06" LONG 124°33'54") RIVER MILE 4.4													
AUG , 1976													
24...	1045	62	13.2	30	1	9.7	155	--	.02	.01	.12	.04	.01
OCT , 1977													
04...	1100	60	7.9	30	1	11.3	B160	B27	.08	.01	.04	.01	.00
475653124343501 COAL CREEK AT MOUTH (LAT 47°56'53" LONG 124°34'35") AT DICKEY RIVER MILE 3.9													
AUG , 1976													
24...	1100	52	12.1	35	6	10.4	180	--	.01	.01	.09	.03	.02
OCT , 1977													
04...	1115	54	7.3	20	2	12.0	430	86	.05	.00	.04	.02	.01
475634124352601 DICKEY RIVER, WA (LAT 47°56'34" LONG 124°35'26") RIVER MILE 2.8													
AUG , 1976													
24...	1125	59	13.4	35	1	9.8	96	--	.02	.01	.06	.02	.01
OCT , 1977													
04...	1145	61	8.0	30	1	11.2	320	B30	.09	.00	.06	.01	.01
475556124361501 DICKEY RIVER, WA (LAT 47°55'56" LONG 124°3[illegible]'15") RIVER MILE 1.5													
AUG , 1976													
24...	1150	59	13.1	35	1	9.6	126	--	.03	.00	.06	.02	.01
OCT , 1977													
04...	1215	61	8.3	30	1	11.1	380	46	.08	.01	.05	.01	.00
475526124365801 DICKEY RIVER, WA (LAT 47°55'26" LONG 124°36'58") RIVER MILE 0.3													
AUG , 1976													
25...	1610	61	14.0	30	1	9.6	158	--	.02	.00	.04	.01	.01
SEP , 1977													
08...	0827	79	--	--	--	9.5	B700	--	--	--	--	--	--

475518124370501 DICKEY RIVER AT MORA BRIDGE, AT MOUTH (LAT 47°55'18" LONG 124°37'05") RIVER MILE 0.2

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	HARDNESS (CA,MG) (MG/L)
AUG , 1976										
24...	1220	--	236	14.6	35	1	9.9	70	--	41
SEP , 1977										
08...	0700	--	107	--	--	--	--	60	--	--
08...	0832	1.0	72	--	--	--	9.3	670	--	--
08...	0833	8.0	73	--	--	--	9.3	210	--	--
08...	1015	--	105	--	--	--	--	380	--	--
08...	1135	--	154	--	--	--	--	B17	--	--
08...	1315	--	69	--	--	--	--	B25	--	--
08...	1420	--	73	--	--	--	9.7	80	--	--
08...	1545	--	120	--	--	--	--	B25	--	--
08...	1715	--	72	--	--	--	--	31	--	--
08...	1900	--	74	--	--	--	--	54	--	--
OCT										
04...	1250	--	71	7.9	30	1	10.8	790	B18	--

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

475518124370501 DICKEY RIVER AT MORA BRIDGE, AT MOUTH (LAT 47°55'18" LONG 124°37'05") RIVER MILE 0.2 (CONT.)

DATE	NON-CARBONATE HARDNESS (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
AUG • 1976									
24...	21	7.2	5.5	44	2.1	24	20	14	79

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
AUG • 1976									
24...	.1	6.3	170	.23	.03	.00	.06	.02	.01
OCT • 1977									
04...	--	--	--	--	.00	.01	.05	.02	.01

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM .7UM-MF (COL./100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
475435124332101 QUILLAYUTE RIVER, WA (LAT 47°54'35" LONG 124°33'21") RIVER MILE 5.7													
AUG • 1976													
25...	1705	80	15.5	0	0	10.3	12	--	.01	.00	.03	.01	.00
OCT • 1977													
05...	1555	77	9.0	0	0	12.6	B200	9	.05	.00	.09	.00	.00
475443124345401 QUILLAYUTE RIVER, WA (LAT 47°54'43" LONG 124°34'54") RIVER MILE 3.3													
AUG • 1976													
25...	1630	80	15.2	0	0	10.6	27	--	.01	.00	.03	.01	.00
OCT • 1977													
05...	1615	82	10.0	0	0	12.6	140	3	.04	.00	.04	.00	.00
475453124360901 QUILLAYUTE RIVER AT JAMES PARK, WA (LAT 47°54'53" LONG 124°36'09) RIVER MILE 2.1													
AUG • 1976													
25...	1620	80	15.2	0	0	10.7	27	--	.01	.00	.02	.01	.00
OCT • 1977													
05...	1635	77	10.0	0	0	12.6	B190	4	.06	.00	.03	.00	.00

475508124370801 QUILLAYUTE RIVER, WA (LAT 47°55'08" LONG 124°37'08") RIVER MILE 1.5

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	SALINITY (PPT)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)
AUG • 1976									
25...	1600	--	82	--	15.2	0	0	10.7	--
SEP									
10...	0755	.8	--	.2	12.4	--	--	9.5	1.0
10...	1345	1.6	--	.1	15.5	--	--	11.3	--
SEP • 1977									
08...	0710	--	85	--	--	--	--	--	--
08...	0850	--	79	--	--	--	--	10.2	--
08...	1030	--	80	--	--	--	--	--	--
08...	1145	--	85	--	--	--	--	--	--
08...	1325	--	79	--	--	--	--	11.2	--
08...	1435	--	81	--	--	--	--	--	--
08...	1605	--	85	--	--	--	--	--	--
08...	1725	--	81	--	--	--	--	--	--
08...	1855	--	82	--	--	--	--	--	--
OCT									
05...	1655	--	78	--	10.0	0	0	12.8	--

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO OCTOBER 1977

475508124370801 QUILLAYUTE RIVER, WA (LAT 47°55'08" LONG 124°38'08") RIVER MILE 1.5 (CONT.)

DATE	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM .7UM-MF (COL./ 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)
AUG , 1976									
25...	20	--	--	--	.01	.00	.02	.00	.00
SEP									
10...	65	15	--	10	--	--	.03	--	--
10...	42	11	--	1	--	--	.02	--	--
SEP , 1977									
08...	B70	--	--	--	--	--	--	--	--
08...	2900	--	--	--	--	--	--	--	--
08...	420	--	--	--	--	--	--	--	--
08...	80	--	--	--	--	--	--	--	--
08...	82	--	--	--	--	--	--	--	--
08...	54	--	--	--	--	--	--	--	--
08...	62	--	--	--	--	--	--	--	--
08...	80	--	--	--	--	--	--	--	--
08...	40	--	--	--	--	--	--	--	--
OCT									
05...	B930	--	5	--	.04	.00	.03	.00	.00

475512124371901 QUILLAYUTE ESTUARY, WA (LAT 47°55'12" LONG 124°37'19") RIVER MILE 1.4

DATE	TIME	SAMP-LING DEPTH (FT)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG , 1976												
11...	1930	1.6	.3	17.0	--	--	--	--	--	--	--	--
12...	0905	1.6	.4	15.2	--	9.6	--	76	--	--	--	--
19...	0840	4.9	.1	14.0	0	10.4	.7	--	--	.02	.00	.01
19...	1030	8.2	.1	--	0	9.6	--	B720	--	.02	.00	.02
19...	1250	8.2	.1	--	0	10.1	--	290	--	.02	.00	.01
19...	1300	8.2	.1	--	0	10.2	.9	140	58	.02	.00	.01
19...	1440	8.2	.1	14.0	0	8.8	1.3	120	--	.02	.00	.00
19...	1720	8.2	.1	14.0	0	10.5	--	150	--	.02	.00	.02
19...	2015	8.2	.1	14.0	1	10.0	1.0	400	--	.02	.00	.09

B Results based upon colony counts outside the ideal range.

475517124371401 (LAT 47°55'17" LONG 124°37'14")
QUILLAYUTE ESTUARY, WA RIVER MILE 1.3 AND AT DICKEY RIVER MILE 0.1

DATE	TIME	SAMP-LING DEPTH (FT)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	DIS-SOLVED OXYGEN (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
SEP , 1976										
10...	0810	.5	1.4	11.8	8.9	1.4	42	48	26	.03
10...	1030	1.6	.2	12.7	9.3	--	88	--	--	.03
10...	1400	1.6	.2	15.0	10.6	--	B800	22	2	.02

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1976

475520124375201 QUILLAYUTE ESTUARY, WA (LAT 47°55'20" LONG 124°37'52") RIVER MILE 1.1

DATE	TIME	SAMP-LING DEPTH (FT)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG , 1976											
11...	1910	1.6	3.0	16.0	--	--	--	--	--	--	--
11...	1915	3.3	2.8	16.5	--	--	--	--	--	--	--
11...	1919	6.6	3.3	16.3	--	--	--	--	--	--	--
11...	1924	9.8	30	11.1	--	--	--	--	--	--	--
11...	1927	13	31	10.6	--	--	--	--	--	--	--
12...	0910	1.6	.8	14.7	--	9.5	1.2	90	--	--	--
12...	0912	3.3	.9	14.7	--	--	--	--	--	--	--
12...	0915	6.6	1.6	14.2	--	--	--	--	--	--	--
12...	0919	9.8	30	10.0	--	--	--	--	--	--	--
12...	0921	13	31	10.2	--	--	--	--	--	--	--
12...	0923	16	31	10.5	--	7.2	1.5	65	--	--	--
19...	0820	1.6	.1	13.0	0	8.5	1.1	--	.02	.00	.03
19...	0825	21	26	--	1	7.1	.9	--	.02	.01	.09
19...	1015	1.6	.1	--	1	9.1	--	B760	.03	.00	.02
19...	1020	20	26	--	1	7.7	--	200	.04	.00	.11
19...	1225	1.6	.2	14.1	1	9.0	--	B130	.02	.00	.02
19...	1235	19	20	14.2	1	7.3	--	170	.03	.01	.10
19...	1430	1.6	.1	14.0	1	8.0	.8	49	.02	.00	.03
19...	1440	18	5.1	14.0	1	7.6	--	10	.02	.01	.06
19...	1700	1.6	.7	14.0	0	10.5	--	150	.02	.00	.02
19...	1715	21	23	14.2	1	7.4	--	116	.03	.00	.12
19...	1950	1.6	.1	14.0	0	10.2	--	B70	.02	.00	.06
19...	1960	23	25	14.2	1	7.0	1.4	120	.03	.00	.03
SEP											
10...	0825	1.6	.3	12.2	--	9.6	1.0	38	--	--	.02
10...	0835	16	25	--	--	5.6	1.2	4	--	--	.07
10...	1415	1.6	.6	16.7	--	11.1	--	35	--	--	.02
10...	1425	23	29	10.1	--	5.9	--	12	--	--	.05

B Results based upon colony counts outside the ideal range.

475511124374901 QUILLAYUTE ESTUARY, WA (LAT 47°55'11" LONG 124°37'49") RIVER MILE 0.9

DATE	TIME	SAMP-LING DEPTH (FT)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG , 1976											
11...	1904	1.6	2.0	15.8	--	--	--	--	--	--	--
11...	1907	3.3	6.2	14.8	--	--	--	--	--	--	--
19...	0805	1.6	.7	13.0	1	8.9	1.0	--	.02	.00	.12
19...	0810	10	26	13.0	1	7.6	1.7	--	.04	.00	.09
19...	1000	1.6	.6	--	1	9.4	--	B800	.02	.00	.02
19...	1005	9.8	26	--	1	7.5	--	200	.03	.00	.08
19...	1205	1.6	1.3	14.0	1	8.9	--	B120	.01	.01	.04
19...	1215	9.8	16	14.0	1	9.4	--	250	.03	.00	.09
19...	1405	1.6	.7	14.0	1	9.6	.9	97	.02	.00	.02
19...	1410	9.8	6.6	14.0	1	10.6	.9	140	.02	.00	.04
19...	1640	1.6	.3	14.2	1	10.4	--	110	.02	.00	.03
19...	1650	11	11	14.3	1	9.0	--	196	.01	.01	.05
19...	1930	1.6	.2	14.0	1	10.2	1.1	102	.02	.00	.10
19...	1940	12	20	14.3	1	7.5	.9	370	.02	.00	.01
SEP											
10...	0845	1.6	1.1	12.4	--	9.6	--	31	--	--	.03
10...	0855	6.6	6.6	12.2	--	8.0	--	23	--	--	.04
10...	1430	1.6	.5	15.0	--	11.0	--	16	--	--	.03
10...	1435	13	29	10.6	--	6.3	--	19	--	--	.04

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1976

475503124380001 QUILLAYUTE ESTUARY, WA (LAT 47°55'03" LONG 124°38'00") RIVER MILE 0.6

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976											
11...	1050	1.6	3.3	15.7	--	--	--	--	--	--	--
11...	1053	3.3	6.1	15.6	--	--	--	--	--	--	--
11...	1057	6.6	27	12.2	--	--	--	--	--	--	--
11...	1400	8.2	31	11.0	--	--	--	--	--	--	--
19...	0825	1.6	2.2	14.3	1	8.6	.6	B60	.02	.00	.07
19...	0830	4.9	21	14.5	1	8.5	1.7	B300	.03	.00	.06
19...	0840	7.5	25	14.5	1	8.3	2.0	120	.03	.00	.10
19...	1030	1.6	2.4	14.3	0	9.1	--	670	.02	.00	.06
19...	1040	4.9	11	14.5	1	8.7	--	--	.03	.00	.23
19...	1045	7.5	23	14.5	1	8.0	--	--	.04	.00	.09
19...	1305	1.6	1.4	14.1	1	9.7	--	500	.02	.00	.06
19...	1310	4.9	1.9	14.1	1	9.7	--	92	.02	.00	.08
19...	1315	5.9	12	14.2	1	7.7	--	120	.03	.00	.08
19...	1510	1.6	.8	14.0	1	9.0	--	60	.02	.00	.02
19...	1515	4.9	9.6	14.1	1	9.8	1.1	260	.02	.00	.01
19...	1520	6.6	22	--	1	6.5	1.5	B50	.01	.01	.07
19...	1720	1.6	.7	14.1	1	10.2	--	540	.02	.00	.02
19...	1725	4.9	2.6	14.2	1	9.8	--	B70	.02	.00	.03
19...	1730	8.2	23	14.5	1	7.6	--	300	.03	.00	.10
19...	2030	1.6	.2	14.6	0	10.2	.7	370	.02	.00	.03
19...	2035	4.9	5.0	14.6	1	9.1	--	720	.03	.00	.07
19...	2040	10	26	14.5	1	8.6	1.6	100	.04	.00	.11
SEP											
10...	0915	1.6	1.4	18.0	--	9.6	1.1	6	--	--	.03
10...	0925	6.6	8.8	12.0	--	9.5	1.4	110	--	--	.07
10...	1445	1.6	.4	15.2	--	11.0	--	35	--	--	.02
10...	1455	13	30	11.2	--	5.9	--	31	--	--	.06

B Results based upon colony counts outside the ideal range.

475453124374701 (LAT 47°54'53" LONG 124°37'47")
SLOUGH BEHIND HARLEY'S RESORT AT LA PUSH, WA AT QUILLAYUTE RIVER MILE 0.5

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL AMMONIA NITROGEN (N) (MG/L)
SEP , 1976									
10...	1100	1.6	--	--	--	230	--	--	--
10...	1115	1.6	5.0	12.0	8.8	300	140	11	.06
10...	1640	1.6	--	--	--	420	--	--	--

475445124380601 (LAT 47°54'45" LONG 124°38'06")
HARLEY'S RESORT INNER BOAT BASIN LA PUSH, WA AT QUILLAYUTE RIVER MILE 0.5

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL AMMONIA NITROGEN (N) (MG/L)
SEP , 1976								
10...	1155	1.6	--	--	2300	130	46	--
10...	1705	1.6	13	8.3	560	36	116	.08
10...	1706	15	--	6.0	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES IN QUILLAYUTE BASIN

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

475456124380401 (LAT 47°54'56" LONG 124°38'04")
MOUTH OF HARLEY'S RESORT BOAT BASIN LA PUSH, WA AT QUILLAYUTE RIVER MILE 0.5

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)
AUG , 1976							
19...	1054	1.6	--	2.5	--	1	8.3
19...	1100	4.2	--	7.3	--	1	7.5
19...	1340	1.6	--	2.1	14.2	1	9.0
19...	1350	3.2	--	2.1	14.2	1	8.7
SEP							
10...	0925	1.6	--	3.4	12.8	--	9.0
10...	0942	3.3	--	4.1	12.7	--	8.4
10...	1050	--	--	--	--	--	--
10...	1505	1.6	--	5.1	14.0	--	--
10...	1513	0.2	--	29	10.3	--	5.7
10...	1722	1.6	--	--	--	--	--
SEP , 1977							
08...	0720	1.0	2200	--	--	--	--
08...	0721	--	40500	--	--	--	--
08...	0900	1.0	1320	--	--	--	9.2
08...	0901	--	43500	--	--	--	7.3
08...	1045	1.0	1460	--	--	--	--
08...	1046	--	45500	--	--	--	--
08...	1200	1.0	1620	--	--	--	--
08...	1201	--	42500	--	--	--	--
08...	1335	1.0	2300	--	--	--	--
08...	1336	--	15100	--	--	--	--
08...	1445	1.0	1460	--	--	--	11.0
08...	1446	--	2260	--	--	--	9.4
08...	1615	1.0	1090	--	--	--	--
08...	1616	--	2090	--	--	--	--
08...	1740	1.0	1310	--	--	--	--
08...	1741	--	10500	--	--	--	--
08...	1905	1.0	1630	--	--	--	--
08...	1906	--	41500	--	--	--	--

DATE	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG , 1976							
19...	1.5	>1000	>450	--	.03	.00	.06
19...	3.9	>1000	--	--	.02	.01	.12
19...	1.0	>1000	>450	--	.01	.01	.04
19...	.9	>800	>450	--	.01	.01	.03
SEP							
10...	1.1	140	30	10	--	--	.04
10...	1.1	9	--	--	--	--	.05
10...	--	89	42	13	--	--	--
10...	--	730	84	64	--	--	.05
10...	1.0	27	--	--	--	--	.05
10...	--	1100	100	108	--	--	--
SEP , 1977							
08...	--	B700	--	--	--	--	--
08...	--	B300	--	--	--	--	--
08...	--	B1400	--	--	--	--	--
08...	--	220	--	--	--	--	--
08...	--	1100	--	--	--	--	--
08...	--	260	--	--	--	--	--
08...	--	62	--	--	--	--	--
08...	--	B39	--	--	--	--	--
08...	--	60	--	--	--	--	--
08...	--	B22	--	--	--	--	--
08...	--	B160	--	--	--	--	--
08...	--	570	--	--	--	--	--
08...	--	<2	--	--	--	--	--
08...	--	B3	--	--	--	--	--
08...	--	<2	--	--	--	--	--
08...	--	160	--	--	--	--	--
08...	--	B3	--	--	--	--	--
08...	--	B3	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

475447124381501 QUILLAYUTE ESTUARY, WA (LAT 47°54'47" LONG 124°38'15") RIVER MILE 0.3

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976											
11...	1835	1.6	2.8	16.0	--	--	--	--	--	--	--
11...	1838	3.3	7.5	15.2	--	--	--	--	--	--	--
11...	1842	9.8	26	10.9	--	--	--	--	--	--	--
11...	1845	6.6	31	11.9	--	--	--	--	--	--	--
12...	1010	1.6	2.8	14.6	--	--	1.4	>560	--	--	--
12...	1012	3.3	5.1	14.3	--	--	--	--	--	--	--
12...	1015	6.6	24	11.8	--	--	1.7	>600	--	--	--
19...	0800	1.6	.9	14.2	1	8.8	.2	B600	.02	.00	.01
19...	0805	3.3	13	14.5	1	8.6	1.5	2100	.01	.01	.01
19...	0810	6.6	25	14.6	1	8.9	1.0	B100	.03	.00	.08
19...	0815	15	26	14.6	1	8.5	1.3	B45	.03	.00	.10
19...	1000	1.6	1.5	14.2	0	9.0	1.3	--	.02	.00	.02
19...	1005	3.3	2.6	14.3	1	9.0	--	--	.02	.00	.03
19...	1015	6.6	24	14.7	1	8.3	--	--	.04	.00	.11
19...	1020	12	26	14.6	1	8.5	1.3	B50	.04	.00	.08
19...	1240	1.6	1.9	14.2	1	9.3	.6	450	.02	.00	.03
19...	1245	3.3	1.9	14.2	1	9.1	--	B800	.02	.00	.02
19...	1250	6.6	16	14.2	1	7.7	--	410	.03	.00	.10
19...	1255	16	24	14.4	1	7.9	1.0	150	.02	.01	.09
19...	1450	1.6	1.6	14.1	1	9.7	2.0	B160	.02	.00	.01
19...	1455	3.3	1.4	14.1	1	9.9	1.4	150	.02	.00	.02
19...	1500	6.6	7.1	14.3	1	6.9	3.0	B180	.03	.00	.06
19...	1505	16	24	14.5	1	5.6	1.5	210	.03	.01	.08
19...	1700	1.6	1.6	14.1	1	9.9	--	B100	.01	.01	.03
19...	1705	3.3	2.0	14.1	1	9.8	--	1100	.02	.00	.03
19...	1710	6.6	20	14.3	2	8.4	--	560	.04	.00	.09
19...	1715	14	25	14.4	1	7.8	--	B170	.03	.01	.10
19...	2010	1.6	.7	14.4	1	10.2	1.1	220	.02	.00	.02
19...	2015	3.3	.7	14.1	1	10.1	1.5	650	.02	.00	.02
19...	2020	6.6	8.9	14.3	1	9.4	1.6	550	.03	.00	.05
19...	2025	14	25	14.4	1	8.0	1.4	B82	.05	.00	.10
SEP , 1976											
10...	0920	1.6	2.2	12.6	--	9.3	1.4	66	--	--	.04
10...	0922	6.6	7.1	12.2	--	8.3	--	85	--	--	.06
10...	0925	9.8	22	11.2	--	6.3	.6	69	--	--	.07
10...	1457	1.6	4.7	14.3	--	9.0	.3	B300	--	--	.06
10...	1500	6.6	27	11.4	--	8.9	--	66	--	--	.06
10...	1503	15	28	9.7	--	7.0	.5	6	--	--	.05

B Results based upon colony counts outside the ideal range.

475438124381201 (LAT 47°54'38" LONG 124°38'12")
MOUTH OF COMMERCIAL BOAT BASIN LA PUSH, WA AT QUILLAYUTE RIVER MILE 0.2

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
AUG , 1976							
12...	1000	1.6	--	8.6	14.3	--	8.6
12...	1002	3.3	--	11	14.0	--	--
12...	1004	6.6	--	26	11.7	--	--
12...	1005	13	--	30	10.3	--	5.2
19...	1040	1.6	--	7.0	14.4	1	8.9
19...	1045	4.9	--	9.3	14.5	1	8.9
19...	1050	19	--	26	14.4	1	8.1
19...	1240	1.6	--	4.0	14.2	1	9.0
19...	1245	4.9	--	7.2	14.3	1	8.8
19...	1250	18	--	22	14.4	2	7.6
SEP							
10...	0903	1.6	--	8.0	12.3	--	8.3
10...	0905	4.9	--	12	12.2	--	8.1
10...	0907	16	--	28	10.2	--	6.9
10...	1130	1.6	--	16	12.6	--	7.6
10...	1445	1.6	--	10	13.7	--	7.9
10...	1447	4.9	--	13	13.2	--	8.3
10...	1449	23	--	26	9.6	--	6.1
10...	1655	1.6	--	10	--	--	8.8
10...	1700	20	--	30	--	--	6.1
SEP , 1977							
08...	0727	1.0	3000	--	--	--	--
08...	0728	--	46500	--	--	--	--
08...	0910	1.0	2750	--	--	--	9.1
08...	0911	--	45500	--	--	--	8.7
08...	1050	1.0	2860	--	--	--	--
08...	1051	--	45500	--	--	--	--
08...	1210	1.0	3000	--	--	--	--
08...	1211	--	45500	--	--	--	--
08...	1342	1.0	2700	--	--	--	--
08...	1343	--	45500	--	--	--	--
08...	1455	1.0	3000	--	--	--	10.6
08...	1456	--	43500	--	--	--	6.6
08...	1625	1.0	2670	--	--	--	--
08...	1626	--	47500	--	--	--	--
08...	1745	1.0	2930	--	--	--	--
08...	1746	--	45500	--	--	--	--
08...	1915	1.0	1430	--	--	--	--
08...	1916	--	47500	--	--	--	--

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

475436124381201 (LAT 47°54'36" LONG 124°38'12")
MOUTH OF COMMERCIAL BOAT BASIN LA PUSH, WA AT QUILLAYUTE RIVER MILE 0.2 (CONT).

DATE	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG. 1976							
12...	1.1	B600	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	1.6	226	--	--	--	--	--
19...	1.3	--	200	--	.02	.00	.04
19...	.5	--	360	--	.02	.00	.08
19...	1.2	--	37	--	.06	.00	.10
19...	1.0	5500	360	--	.02	.00	.06
19...	1.0	B12000	>320	--	.02	.00	.09
19...	1.7	6600	180	--	.04	.01	.10
SEP							
10...	1.1	170	92	54	--	--	.10
10...	--	99	--	--	--	--	.10
10...	.8	240	--	--	--	--	.10
10...	--	730	160	68	--	--	.10
10...	1.2	340	37	46	--	--	.07
10...	--	250	--	--	--	--	.06
10...	1.3	270	--	--	--	--	.06
10...	--	>300	--	--	--	--	.12
10...	--	200	--	--	--	--	.09
SEP. 1977							
08...	--	440	--	--	--	--	--
08...	--	B160	--	--	--	--	--
08...	--	650	--	--	--	--	--
08...	--	300	--	--	--	--	--
08...	--	540	--	--	--	--	--
08...	--	817	--	--	--	--	--
08...	--	240	--	--	--	--	--
08...	--	60	--	--	--	--	--
08...	--	62	--	--	--	--	--
08...	--	3300	--	--	--	--	--
08...	--	B1300	--	--	--	--	--
08...	--	770	--	--	--	--	--
08...	--	62	--	--	--	--	--
08...	--	210	--	--	--	--	--
08...	--	116	--	--	--	--	--
08...	--	B36	--	--	--	--	--
08...	--	146	--	--	--	--	--
08...	--	817	--	--	--	--	--

475434124381801 (LAT 47°54'34" LONG 124°38'18")
QUILLAYUTE ESTUARY, WA RIVER MILE 0.1, AT SITE OF FIRST QUARTILE FROM LEFT BANK

DATE	TIME	SAMP-LING DEPTH (FT)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG. 1976												
11...	1015	1.6	5.0	15.6	--	--	--	--	--	--	--	--
11...	1018	3.3	7.2	15.2	--	--	--	--	--	--	--	--
11...	1022	6.6	21	13.2	--	--	--	--	--	--	--	--
11...	1025	13	30	10.7	--	--	--	--	--	--	--	--
11...	1028	9.8	29	11.0	--	--	--	--	--	--	--	--
11...	1032	16	30	10.0	--	--	--	--	--	--	--	--
19...	0840	1.6	1.7	14.2	1	9.3	1.1	730	56	.02	.00	.01
19...	0845	4.9	6.9	14.5	1	8.4	1.3	B1000	--	.02	.00	.02
19...	0850	9.8	22	14.6	1	7.2	1.6	B340	--	.04	.00	.05
19...	0855	21	25	14.6	1	8.4	.8	9	--	.05	.00	.09
19...	1015	1.6	2.0	14.6	1	8.7	--	B860	--	.02	.00	.02
19...	1020	4.9	4.1	14.4	1	8.7	--	--	--	.02	.00	.03
19...	1025	9.8	21	14.6	1	5.4	--	--	--	.04	.00	.09
19...	1030	16	25	14.4	1	5.2	--	--	--	.03	.01	.09
19...	1430	1.6	3.4	14.2	1	9.1	1.3	560	>270	.03	.00	.02
19...	1435	4.9	5.6	14.2	1	8.0	1.0	B2000	400	.02	.01	.03
19...	1440	9.8	23	14.4	1	5.6	3.4	340	55	.02	.01	.10
19...	1445	25	25	14.3	1	5.4	.4	63	11	.03	.01	.10
19...	1640	1.6	4.4	14.2	1	9.8	--	--	370	.01	.01	.04
19...	1645	4.9	16	14.2	2	8.6	--	>1000	106	.03	.00	.09
19...	1650	9.8	24	14.4	1	8.5	--	130	10	.04	.00	.10
19...	1655	23	25	14.4	2	7.7	--	60	9	.05	.00	.08
19...	2000	1.6	3.1	14.3	1	10.2	1.6	>1000	--	.02	.00	.03
19...	2005	4.9	6.0	14.3	1	10.1	1.1	>1000	>220	.03	.00	.06
19...	2010	9.8	22	14.5	1	9.4	--	B860	--	.04	.00	.10
19...	2015	26	25	14.4	1	8.0	.6	860	--	.05	.00	.11
SEP. 1976												
10...	0840	1.6	4.3	12.2	--	8.7	1.5	19	--	--	--	.05
10...	0843	4.9	4.9	12.0	--	8.0	--	31	--	--	--	.05
10...	0845	9.8	27	10.5	--	5.6	--	100	--	--	--	.08
10...	0850	22	30	8.8	--	3.8	1.1	8	--	--	--	.06
10...	1425	1.6	2.3	14.7	--	10.2	1.0	360	--	--	--	.06
10...	1427	4.9	25	12.5	--	6.9	--	230	--	--	--	.05
10...	1430	9.8	27	10.1	--	6.9	--	66	--	--	--	.06
10...	1432	31	28	9.6	--	5.4	.6	8	--	--	--	.05

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA AUGUST 1976

QUARTILE RUN, QUILLAYUTE ESTUARY, WA (LAT 47°54'34" LONG 124°38'18") AT RIVER MILE 0.1

475434124381802 FIRST QUARTILE FROM LEFT BANK

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976												
19...	1220	1.0	2.4	14.1	1	9.3	1.5	100	110	.02	.00	.03
19...	1225	6.0	0.5	14.3	1	8.6	1.1	>800	100	.02	.00	.05
19...	1230	8.0	27	14.0	1	7.8	1.2	142	17	.04	.01	.08
19...	1235	20	26	14.4	1	7.9	1.6	100	4	.05	.00	.12

475434124381803 SECOND QUARTILE FROM LEFT BANK

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976												
19...	1215	1.0	4.6	14.2	1	9.0	1.6	8600	90	.02	.00	.04

475434124381804 THIRD QUARTILE FROM LEFT BANK

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976												
19...	1210	1.0	3.2	14.1	1	9.3	1.1	8500	78	.02	.00	.03

475434124381805 FOURTH QUARTILE FROM LEFT BANK

DATE	TIME	SAMPLING DEPTH (FT)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976												
19...	1205	1.0	2.8	14.1	1	9.2	.8	200	46	.02	.00	.02

K Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

475419124383401 (LAT 47°54'19" LONG 124°38'34")
QUILLAYUTE ESTUARY AT SOUTH END OF JAMES ISLAND, WA 0.2 MI OFFSHORE FROM QUILLAYUTE RIVER MILE 0.0

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	SALIN-ITY (PPT)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	*MEAN DAILY DIS-CHARGE (CFS)
AUG., 1976								
11...	1000	1.0	--	0.0	15.3	--	--	825
11...	1005	6.0	--	20	13.6	--	--	--
11...	1007	13	--	30	11.0	--	--	--
11...	1010	23	--	31	9.3	--	--	--
12...	1030	1.0	--	0.7	13.7	--	8.1	825
12...	1032	3.3	--	31	10.4	--	--	--
12...	1033	6.6	--	32	9.6	--	--	--
12...	1035	9.0	--	32	--	--	--	--
12...	1037	13	--	32	9.1	--	--	--
12...	1040	16	--	32	9.1	--	5.3	--
19...	0900	1.0	--	2.0	14.5	1	8.0	1,000
19...	0905	6.0	--	20	14.6	1	8.3	--
19...	0910	13	--	26	14.6	3	8.4	--
19...	0915	26	--	26	14.5	2	7.8	--
19...	1045	1.0	--	2.0	14.8	0	9.0	--
19...	1050	6.0	--	3.0	--	1	8.1	--
19...	1055	13	--	23	--	1	7.3	--
19...	1100	26	--	25	--	3	5.3	--
19...	1410	1.0	--	3.7	14.0	1	9.6	--
19...	1415	26	--	26	14.0	2	6.0	--
19...	1420	6.0	--	9.3	14.0	1	8.9	--
19...	1425	13	--	26	14.2	1	6.3	--
19...	1930	1.0	--	9.7	14.3	1	8.8	--
19...	1940	6.0	--	22	14.3	1	8.7	--
19...	1945	13	--	24	14.4	1	8.5	--
19...	1950	31	--	25	14.4	2	8.3	--
SEP								
10...	0815	1.6	--	5.6	12.2	--	8.7	950
10...	0820	6.6	--	26	9.8	--	5.7	--
10...	0822	13	--	29	9.3	--	4.5	--
10...	0830	22	--	30	8.5	--	3.2	--
10...	1403	1.6	--	23	12.0	--	7.6	--
10...	1405	6.6	--	27	11.8	--	6.9	--
10...	1407	13	--	27	11.0	--	7.0	--
10...	1410	21	--	29	10.3	--	6.6	--
SEP., 1977								
08...	0735	1.0	14000	--	--	--	--	1,000
08...	0736	--	49500	--	--	--	--	--
08...	0800	1.0	7500	--	--	--	9.1	--
08...	0801	--	47500	--	--	--	9.0	--
08...	1100	1.0	25500	--	--	--	--	--

* Estimated mean daily freshwater discharge to the Quillayute Estuary.

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

475419124383401 (LAT 47°54'19" LONG 124°38'34")

QUILLAYUTE ESTUARY AT SOUTH END OF JAMES ISLAND, WA 0.2 MI OFFSHORE FROM QUILLAYUTE RIVER MILE 0.0 (CONT).

DATE	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)
AUG , 1976							
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
12...	1.5	>300	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	1.2	4	--	--	--	--	--
19...	1.0	2300	--	--	.02	.00	.09
19...	1.2	390	25	--	.04	.00	.04
19...	--	--	--	--	.04	.01	.12
19...	--	9	--	--	.05	.00	.10
19...	1.1	--	--	--	.02	.00	.03
19...	--	--	--	--	.02	.00	.03
19...	--	290	--	--	.05	.00	.08
19...	--	--	--	--	.04	.00	.12
19...	1.2	680	--	--	.02	.00	.02
19...	--	--	--	--	.03	.01	.10
19...	1.6	620	--	--	.02	.01	.04
19...	1.0	270	--	--	.03	.01	.10
19...	1.3	6000	--	--	.02	.00	.08
19...	1.2	870	--	--	.05	.00	.09
19...	--	8170	--	--	.05	.00	.07
19...	1.3	B50	--	--	.04	.01	.08
SEP							
10...	1.6	69	46	26	--	--	.04
10...	--	35	--	--	--	--	.07
10...	--	15	--	--	--	--	.05
10...	1.4	4	--	--	--	--	.05
10...	1.1	27	1	3	--	--	.08
10...	--	4	--	--	--	--	.04
10...	--	4	--	--	--	--	.03
10...	.9	<1	--	--	--	--	.03
SEP , 1977							
08...	--	B1100	--	--	--	--	--
08...	--	B25	--	--	--	--	--
08...	--	B1200	--	--	--	--	--
08...	--	<3	--	--	--	--	--
08...	--	550	--	--	--	--	--

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
SEP , 1977					
08...	1101	--	49500	--	9
08...	1220	1.0	5500	--	B18
08...	1221	--	49500	--	<9
08...	1350	1.0	17000	--	114
08...	1351	--	47500	--	B8
08...	1505	1.0	10000	10.6	B21
08...	1506	--	45500	7.0	B11
08...	1640	1.0	4000	--	B13
08...	1641	--	44500	--	B2
08...	1755	1.0	5000	--	B33
08...	1756	--	45500	--	B6
08...	1920	1.0	13500	--	152
08...	1921	--	47500	--	100

B Results based upon colony counts outside the ideal range.

WATER QUALITY DATA, AUGUST 1976 TO SEPTEMBER 1977

475350124384001 (LAT 47°53'50" LONG 124°38'40")
PACIFIC OCEAN 0.8 MI OFFSHORE FROM RIVER MILE 0.0 ON QUILLAYUTE ESTUARY

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	SALINITY (PPT)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
AUG , 1976							
11...	1745	1.6	--	25	12.2	--	--
11...	1747	9.8	--	31	11.0	--	--
11...	1750	20	--	31	9.6	--	--
11...	1752	33	--	32	9.6	--	--
12...	1042	1.6	--	28	10.9	--	--
12...	1045	3.3	--	31	10.5	--	--
12...	1047	6.6	--	32	9.0	--	--
12...	1048	9.8	--	32	8.9	--	--
12...	1050	16	--	32	8.8	--	--
12...	1052	33	--	33	8.3	--	--
19...	0915	9.8	--	25	14.1	1	8.6
SEP							
10...	0805	1.6	--	23	10.3	--	6.7
10...	0810	20	--	30	8.6	--	3.7
10...	1347	1.6	--	28	12.4	--	7.2
10...	1350	20	--	29	10.8	--	6.5
SEP , 1977							
08...	0930	1.0	44600	--	--	--	8.6
08...	0931	33	46500	--	--	--	6.6
08...	0932	66	43500	--	--	--	5.2
08...	1810	1.0	44500	--	--	--	--
08...	1811	33	48500	--	--	--	--
08...	1812	66	49500	--	--	--	--

DATE	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)
AUG , 1976							
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	1.0	10	--	--	--	--	--
12...	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--
19...	1.1	--	1	--	.05	.00	.07
SEP							
10...	1.5	35	10	100	--	--	--
10...	1.4	12	<1	1	--	--	.04
10...	.8	<1	2	<1	--	--	.05
10...	.7	<1	2	71	--	--	.06
SEP , 1977							
08...	--	B140	--	--	--	--	--
08...	--	82	--	--	--	--	--
08...	--	<100	--	--	--	--	--
08...	--	<2	--	--	--	--	--
08...	--	<3	--	--	--	--	--
08...	--	<9	--	--	--	--	--

B Results based upon colony counts outside the ideal range.

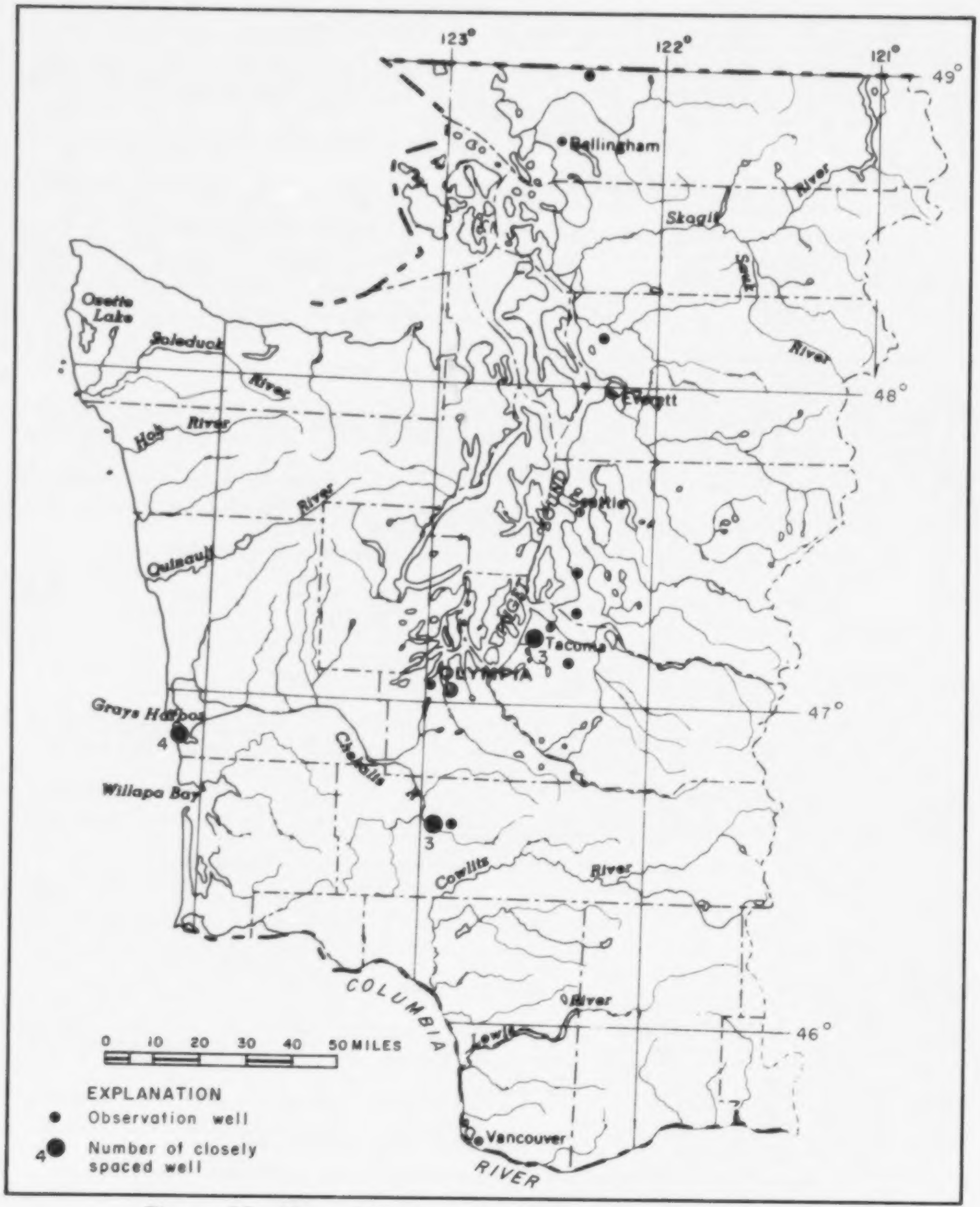
123°
122°
121°
49°
48°
47°
46°
Bellingham
Skagit River
Sauk River
River
Ozette Lake
Soleduck River
Hoh River
Quinault River
Everett
Seattle
Puget Sound
Tacoma
Olympia
Grays Harbor
Willapa Bay
Chehalis R
Cowlitz River
Columbia River
Lewis River
Vancouver
4
3
3
0 10 20 30 40 50 MILES
EXPLANATION
● Observation well
4● Number of closely spaced well

Figure 22. Map of Western Washington showing locations of ground-water level observations.

GRAYS HARBOR COUNTY

465123124062201. Local number, 16/12W-24J4.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) above mean sea level.
REMARKS.--Monitored depth interval from 187 to 192 ft (57.0 to 58.5 m), water level measured in 12 in (300 mm) diameter casing.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.19 ft (2.801 m) below land-surface datum, Mar. 14, 1972; lowest measured, 11.05 ft (3.368 m) below land-surface datum, Oct. 4, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Dec. 13, 1976	11.03						

465123124062202. Local number, 16/12W-24J5.
LOCATION.--46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) above mean sea level.
REMARKS.--Monitored depth interval from 269 to 279 ft (82.0 to 85.0 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.84 ft (2.694 m) below land-surface datum, Mar. 14, 1972; lowest measured, 98.50 ft (30.023 m) below land-surface datum, June 23, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Dec. 13, 1976	10.19						

465123124062203. Local number, 16/12W-24J6.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) above mean sea level.
REMARKS.--Monitored depth interval from 327 to 332 ft (99.7 to 101.2 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.87 ft (2.704 m) below land-surface datum, Apr. 5, 1972; lowest measured, 10.27 ft (3.130 m) below land-surface datum, Aug. 17, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Dec. 13, 1976	10.08						

465123124062204. Local number, 16/12W-24J7.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sandy clay of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) above mean sea level.
REMARKS.--Monitored depth interval from 516 to 521 ft (157.3 to 158.8 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.66 ft (2.640 m) below land-surface datum, Oct. 24, 1973; lowest measured, 10.32 ft (3.146 m) below land-surface datum, Aug. 7, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Dec. 13, 1976	10.19						

KING COUNTY

471715122191501. Local number, 21/4-20Q1.
LOCATION.--Lat 47°17'15", long 122°19'15", Hydrologic Unit 17110019, near Federal Way.
Owner: Water District No. 124.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 8 in (200 mm), depth 150 ft (45.7 m).
DATUM.--Land-surface datum is 235 ft (71.6 m) above mean sea level.
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.07 ft (1.850 m) below land-surface datum, Feb. 8, 1967; lowest measured, 31.98 ft (9.748 m) below land-surface datum, July 17, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 6, 1976	13.06	Mar. 3, 1977	24.87				

472457122185801. Local number, 22/4-8A1.
LOCATION.--Lat 47°24'57", long 122°18'58", Hydrologic Unit 17110019, near Des Moines.
Owern: Water District No. 75.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 12 in (300 mm), depth 395 ft (120.4 m).
DATUM.--Land-surface datum is 200 ft (61.0 m) above mean sea level.
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 59.03 ft (17.992 m) below land-surface datum, Apr. 23, 1968; lowest measured, 71.69 ft (21.851 m) below land-surface datum, Aug. 10, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 3, 1977	67.19	Sept. 12, 1977	70.07				

LEWIS COUNTY

463441122485201. Local number, 13/1W-28P1.
LOCATION.--Lat 46°34'41", long 122°48'52", Hydrologic Unit 17100103.
Owner: R. L. Wade.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic and irrigation artesian well, diameter 6 in (150 mm), depth 112 ft (34.1 m), cased to 112 ft (34.1 m).
DATUM.--Land-surface datum about 360 ft (110 m) above mean sea level.
PERIOD OF RECORD.--Highest water level measured, 63.8 ft (19.45 m) above land-surface datum, Apr. 18, 1954; lowest measured, 15.6 ft (4.75 m) above land-surface datum, Feb. 7, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 18, 1976	*23.60	Apr. 20, 1977	*23.60				

463527122502001. Local number, 13/1W-29D1.
LOCATION.--Lat 46°35'27", long 122°50'20", Hydrologic Unit 17100103.
Owner: J. C. Marshall.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (150 mm), depth 230 ft (70.1 m), cased to 212 ft (64.6 m).
DATUM.--Land-surface datum about 305 ft (93.0 m) above mean sea level.
PERIOD OF RECORD.--July 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 98.0 ft (29.9 m) above land-surface datum, June 21, 1968; lowest measured, 83.0 ft (25.3 m) below land-surface datum, Mar. 13, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 18, 1976	*6.92	Apr. 20, 1977	*5.31				

463532122393202. Local number, 13/1-22R2.
LOCATION.--Lat 46°35'32", long 122°39'32", Hydrologic Unit 17100103.
Owner: Chas. E. Greene.
AQUIFER.--Glacial clay and sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (200 mm), depth 150 ft (45.7 m), cased to 113 ft (34.4 m).
DATUM.--Land-surface datum about 600 ft (183 m) above mean sea level.
PERIOD OF RECORD.--March 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.1 ft (8.56 m) above land-surface datum, Jan. 5, Feb. 7, May 12, June 23, 1967; lowest measured, 3.5 ft (1.07 m) above land-surface datum, Nov. 20, 1972, Oct. 16, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 28, 1976	*10.5	Apr. 20, 1977	*8.50				

* Water levels above land surface.

LEWIS COUNTY--Continued

463558122502201. Local number, 13/1W-20E1.
LOCATION.--Lat 46°35'58", long 122°50'22", Hydrologic Unit 17100103.
Owner: A. B. Isberg.
AQUIFER.--Marine sandstone of Eocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (150 mm), depth 1,645 ft (501.4 m) cased to 204 ft (62.2 m).
DATUM.--Land-surface datum about 320 ft (97.5 m) above mean sea level.
PERIOD OF RECORD.--July 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 76.0 ft (23.16 m) above land-surface datum, Aug. 12, 1968; lowest measured, 2.00 ft (0.610 m) above land-surface datum, Apr. 20, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 18, 1976	+5.2	Apr. 20, 1977	+2.00B				

PIERCE COUNTY

470933122182001. Local number, 19/4-4L1.
LOCATION.--Lat 47°09'33", long 122°18'20", Hydrologic Unit 17110014.
Owner: Fruitland Mutual Water Company.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (150 mm), depth 240 ft (73.2 m), cased to 240 ft (73.2 m), perforated 200 to 235 ft (61.0 to 71.6 m).
DATUM.--Land-surface datum about 355 ft (108.2 m) above mean sea level.
PERIOD OF RECORD.--June 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 207.80 ft (63.337 m) below land-surface datum, Aug. 10, 1972; lowest measured, 239.28 ft (72.933 m) below land-surface datum, Feb. 1, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 8, 1976	214.62	Mar. 3, 1977	223.29A	July 5, 1977	232.51A	Sept. 12, 1977	236.22
Jan. 3, 1977	219.16	May 3	227.65A				

471308122305501. Local number, 20/2-14L1.
LOCATION.--Lat 47°13'08", long 122°30'55", Hydrologic Unit 17110019.
Owner: Town of Fircrest, Well No. 8.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 20 in (500 m), depth 141 ft (43.0 m), cased to 112 ft (34.1 m).
DATUM.--Land-surface datum about 295 ft (89.9 m) above mean sea level.
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.21 ft (24.143 m) below land-surface datum, Apr. 24, 1972; lowest measured, 92.05 ft (28.057 m) below land-surface datum, Sept. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 8, 1976	82.25B	Feb. 28, 1977	81.79	July 5, 1977	83.01B	Sept. 12, 1977	92.05
Jan. 3, 1977	82.38B	May 3	84.06	Aug. 9	84.84B		

471338122282201. Local number, 20/3-18C1.
LOCATION.--Lat 47°13'38", long 122°28'22", Hydrologic Unit 17110019.
Owner: City of Tacoma.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused-test artesian well, diameter 12 in (300 mm), depth 185 ft (56.4 m), cased to 152 ft (46.3 m).
DATUM.--Land-surface datum about 310 ft (94.5 m) above mean sea level.
PERIOD OF RECORD.--March 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.85 ft (19.461 m) below land-surface datum, Oct. 5, 1954; lowest measured, 127.38 ft (38.825 m) below land-surface datum, Mar. 27, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 8, 1976	107.70	Mar. 3, 1977	106.90	July 5, 1977	107.54	Sept. 12, 1977	109.43
Jan. 3, 1977	107.74	May 3	106.52				

A Well being pumped.
B Well recently pumped.
+ Water levels above land surface.

PIERCE COUNTY--Continued

471358122302207. Local number, 20/2-11J7.
LOCATION.--Lat 47°13'58", long 122°30'22", Hydrologic Unit 17110019.
Owner: Fircrest Well No. 3.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (300 mm), depth 152 ft (46.3 m), perforated 88 to 94 ft (26.8 to 28.7 m) and 141 to 149 ft (34.0 to 45.4 m).
DATUM.--Land-surface datum about 285 ft (86.9 m) above mean sea level.
PERIOD OF RECORD.--August 1963 to February 1964, December 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.31 ft (18.382 m) below land-surface datum, Feb. 14, 1964; lowest measured, 68.21 ft (20.790 m) below land-surface datum, Oct. 1, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 8, 1976	64.56	Mar. 3, 1977	64.25	July 5, 1977	64.57	Sept. 12, 1977	65.96
Jan. 3, 1977	64.38	May 3	63.87	Aug. 9	66.24		

SNOHOMISH COUNTY

481115122082001. Local number, 31/5-10J3.
LOCATION.--Lat 48°11'15", long 122°08'20", Hydrologic Unit 17110008, near Arlington.
Owner: Robert Wellin.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in (150 mm), depth 120 ft (36.6 m), cased to 117 ft (35.7 m).
DATUM.--Land-surface datum about 85 ft (25.9 m) above mean sea level.
PERIOD OF RECORD.--September 1945 to October 1961, May 1968 to current year.
EXTREMES FOR PERIOD OF RECORD--Highest water level measured, 21.37 ft (6.514 m) below land-surface datum, Sept. 17, 1948; lowest measured, 32.37 ft (9.866 m) below land-surface datum, Sept. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 1, 1976	27.99	Mar. 17, 1977	29.52	July 28, 1977	30.86	Sept. 30, 1977	32.37
Feb.15, 1977	29.89	May 18	29.90				

THURSTON COUNTY

470318122581601. Local number, 18/2W-7R1.
LOCATION.--Lat 47°03'18", long 122°58'16", Hydrologic Unit 17110019, near Olympia.
Owner: Al Racine.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (200 mm), depth 125 ft (38.1 m), cased to 120 ft (36.6 m).
DATUM.--Land-surface datum about 170 ft (51.8 m) above mean sea level.
PERIOD OF RECORD.--July 1958, November 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 68.98 ft (21.025 m) below land-surface datum, June 7, 1972; lowest measured, 85.13 ft (25.948 m) below land-surface datum, Aug. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 29, 1976	79.77	Mar. 30, 1977	83.38	July 29, 1977	85.06	Aug. 1, 1977	85.13
Jan. 31, 1977	81.89	June 1	84.22				

WHATCOM COUNTY

485934122193801. Local number, 40/4-5D1.
LOCATION.--48°59'34", long 122°19'38", Hydrologic Unit 17110001, Van Buren and Hoverstick Roads, Sumas.
Owner: Paul Roorda.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug domestic and stock water-table well, 20 by 30 in (500 by 750 mm), depth 61 ft (18.6 m), lined with concrete to 61 ft (18.6 m).
DATUM.--Land-surface datum about 180 ft (55 m) above mean sea level.
REMARKS.--Water levels used in monthly Water Resources Review.
PERIOD OF RECORD.--October 1940 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.98 ft (14.624 m) below land-surface datum, Mar. 20, 1972; lowest dry, water level not measureable, Jan. 10, 1944, Oct. 4, 1944, Jan. 1, 1953, Sept. 30, 1958, Nov. 27, 1973, Sept. 27, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 22, 1976	54.88	Feb. 28, 1977	54.68	May 25, 1977	54.58	Aug. 25, 1977	56.28
Dec. 22	55.28	Mar. 24	54.58	June 29	55.08	Sept. 22	57.28
Jan. 21, 1977	55.08	May 4	54.28	July 21	55.85	Sept. 27	dry

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FACTORS FOR CONVERTING U.S. CUSTOMARY UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the U.S. customary units published herein to the International System of Units (SI). Subsequent reports will contain both the U.S. customary and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply U.S. customary units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons